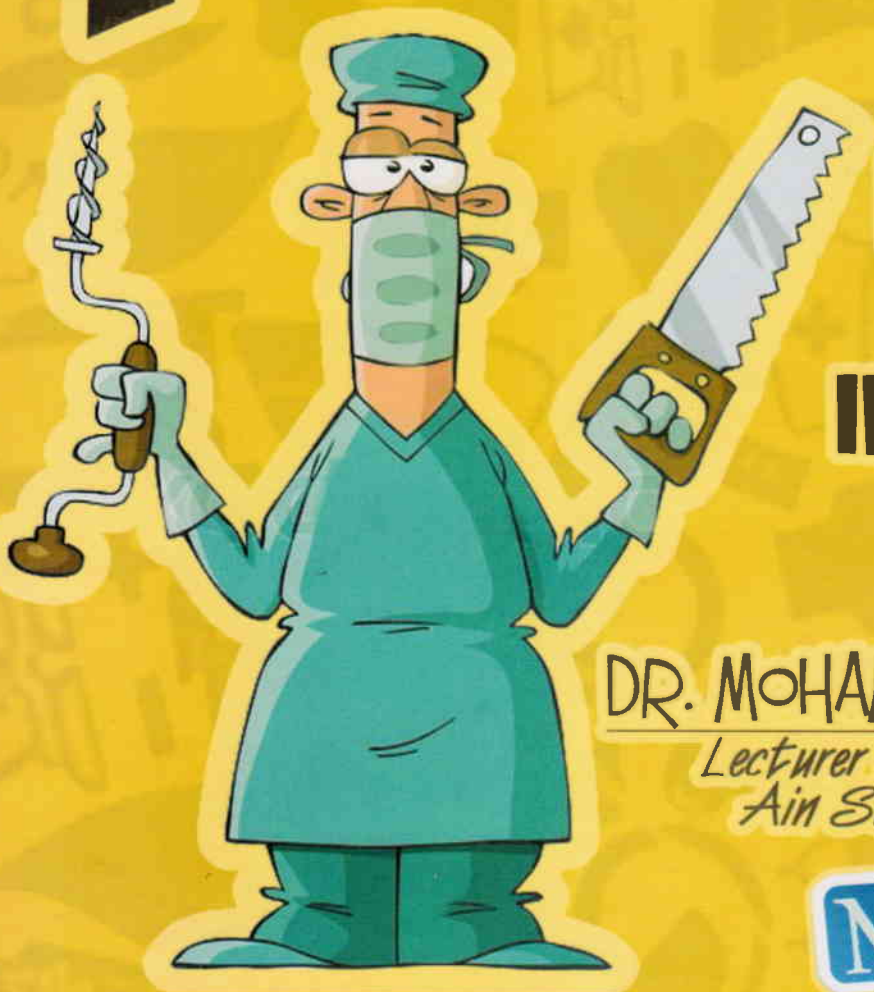


SURGI- TOONS



PART "2" GASTRO- INTESTINAL SURGERY

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HOW TO USE THIS BOOK ?

This Book is designed to Simplify "Surgery" and make it amusing as it should be. Each branch is mind mapped in the form of tables, algorithms and diagrams to make it easy for you to revise the whole branch in a matter of hours!

There's a bunch of Special Add-ons following each branch in this book, which will make your study driven to the target...



TWEET W GEBNA

Tweets of Information that you may miss during studying the branch, Along with some important points from the MCQs All Together in a couple of papers!!



KEYS TO CASES

Grab the ideas of important Clinical cases, what you exactly need to know about each case in a few words



QUESTION BANK

Questions from previous exams arranged and categorized according to the subject to give you an accurate statistic to drive your attention to the important and repeated questions.



TAKE YOUR NOTES

If you find some extra information useful, Go on! Add them there!!

Have a blast enjoying "SURGI-TOONS" :)

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SURGI- TOONS

HERNIA



Michael Safwat
MBBCh - Ain Shams University

HERNIA SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- General scheme
- Hernia "WQ"
- Oblique vs. Direct vs. Femoral hernia
- Umbilical hernia
- Complications of hernia
- Strangulated hernia
- Other types of hernia

SCHEME FOR WRITTEN QUESTIONS

- ⊖ Definition
 - Pathological
 - Clinical
- ⊖ Etiology :
 - Congenital or acquired
 - Predisposing factors
- ⊖ Pathology
 - Sac
 - Content
 - Defect
- ⊖ Type :
 - External
 - Internal
- ⊖ Clinical picture
 - Precipitating factors
 - Case (READ)
 - Complications
 - DD
- ⊖ Investigations
 - Pre-operative, for precipitating factors
- ⊖ Treatment
 - Treatment of Precipitating factors
 - Surgery
 - Palliative
- ⊖ If complicated: TTT. of the cause

INCIDENCE:

- ❖ Most common hernias are:
 - Inguinal hernia (1st)
 - Incisional hernia (2nd)
 - Epigastric hernia
 - Femoral hernia
- ❖ Most common strangulated hernia is Inguinal hernia
- ❖ Most Liable hernia for strangulation is Femoral hernia
- Neck of hernia sac:**
- ❖ Narrow :
 - Femoral hernia
 - Para-umbilical hernia
- ❖ Ill-defined :
 - Incisional hernia

EXPANSILE IMPULSE ON COUGH

▪ Why?

SAC is continuous with peritoneum

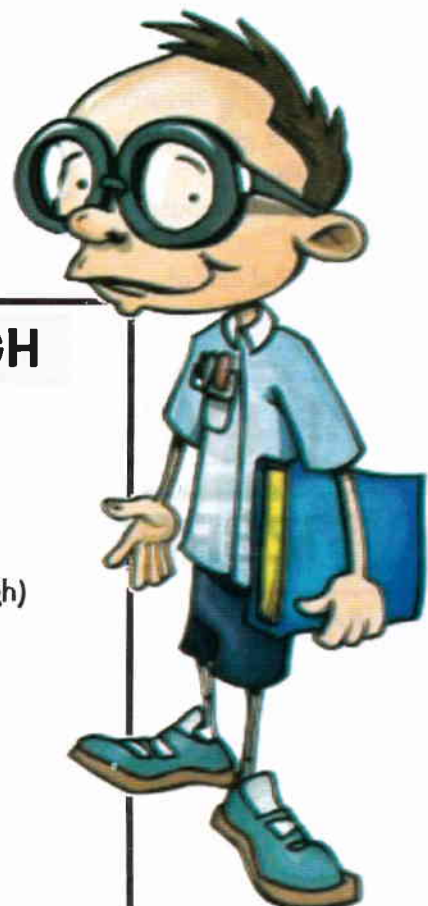
▪ When Hernia doesn't give expansile impulse :

Strangulated, Fatty hernia of linea alba,

Large hernia (gives weak expansile impulse on cough)

▪ Other sacs with expansile impulse

- Laryngeocoele
- Pneumatocoele
- Meningocoele
- Varicocoele
- Saphena varix



ABDOMINAL HERNIA

DEFINITION

- Pathologically: Protrusion of a **VISCOUS** within a peritoneal **SAC** through a **DEFECT** in abdominal wall
- Clinically: Painless swelling characterized by "READ"
Reducible, expansile impulse on cough, on anatomical site of hernia, with a defect

ETIOLOGY

- **Predisposing Factors**
 - CONGENITAL... Congenital Inguinal , Congenital Umbilical hernia
 - ACQUIRED→INCISIONAL: Paralytic (DIH after Grid iron incision, Kocker incision), Defective type
- **Precipitating Factors**
 - ↑Intra-abdominal Pressure... Chronic cough, straining, obesity
 - Weak anterior abdominal Wall Repeated Pregnancy, obesity

PATHOLOGY

- Defect
- Sac
- Content
- Coverings

CLINICAL PICTURE

Symptoms

- PAINLESS SWELLING**
Characterized by "READ"
- Reducible, or gives history of reducibility
 - giving expansile impulse on cough,
 - On anatomical site of hernia,
 - with a defect

General O/E

- signs of mesenchymal weakness
- PPT factors
- complications

LOCAL O/E

- 1) Inguino-scrotal, Para-umbilical swelling
- 2) Expansile impulse on cough
- 3) Descent.....
- 4) Reducible

COMPLICATIONS& DD

INVESTIGATIONS

- Hernia is a clinical diagnosis
- Investigations for the precipitating factors & Pre-operatively (CXR, CBC, FBS, U/S, LFTs, KFTs)

TREATMENT

TTT of PPT factors

Surgical Treatment For uncomplicated cases

TTT of Complications

Herniotomy

Herniorrhaphy

Hernioplasty

COMPLICATIONS OF HERNIA

IRREDUCIBILITY

- **DEFINITION:** Failure, of whole or part of hernia contents to return to abdomen
- **ETIOLOGY:**
 - **MOST COMMON CAUSE:** Adhesions between sac, Contents
 - Other causes: Adhesions between contents, Overcrowding of contents, Narrow Neck, Sliding Hernia, Omentum in sac
- **TTT:** Surgical repair as early as possible ... **TRUSS IS #** (may lead to strangulation)

OBSTRUCTION

- **DEFINITION:** Occlusion of intestinal lumen without interference with blood supply
- **CLINICAL PICTURE:**
 - Abdominal colic, projectile vomiting, absolute constipation, distension
 - Hernia sac is Tender, Soft, Giving weak expansile impulse on cough
- **TTT:** Urgent Operation

INFLAMMATION

- **ETIOLOGY:**
 - Inflammation of Sac → due to truss
 - Inflammation of Content → appendicitis, Meckel's diverticulitis
- **CLINICAL PICTURE:**
 - FAHM, Pain at site of swelling
 - O/E: hernia is red, hot, tender, giving expansile impulse on cough
- **TTT**
 - If due to truss → Remove truss, give NSAIDs, Elective repair
 - If due to appendicitis → Appendectomy, Hernia repair

HYDROCELE OF HERNIA SAC

- **DEFINITION:** Omentum obstructs opening of sac, only fluid passes to sac
- **CLINICAL PICTURE:** Cystic, Translucent, Inguino-scrotal swelling
- **TTT:** Excision

Hydrocoele occurs in **INGUINAL, FEMORAL** hernia ... But **NEVER** occurs in epigastric & umbilical hernia

OTHER COMPLICATIONS:

- Rupture of hernia sac
- Torsion of the omentum
- Sliding



STRANGULATED HERNIA

DEFINITION

- Interference with blood supply of contents leading to gangrene within 4-6 hours

INCIDENCE

- Most common cause of intestinal obstruction
- Most common hernia to be strangulated → Inguinal hernia
- Most Liable hernia to be strangulated → Femoral hernia
- Most common contents to be strangulated → Small intestine.. Omentum

ETIOLOGY

- ✓ Sharp edge of defect
- ✓ Narrow neck in relation to large content
- ✓ Irreducibility → Obstruction → Inflammation

PATHOLOGY

- ✓ Constriction → Bands of adhesions, defect
- ✓ Obstruction of vein, artery ... صديد , دم , دموع
- ✓ Sac → Distended & Loses its luster
- ✓ Covering → Inflamed

CLINICAL PICTURE

SYMPTOMS

- ✓ History of painless swelling which becomes painful (Colic & Stabbing)
- ✓ Picture of intestinal obstruction →
Abdominal colic + Projectile vomiting + absolute constipation + Distension

GENERAL EXAMINATION

- ✓ Bad general condition
- ✓ Shock

LOCAL

- ✓ Swelling with **NO EXPANSILE IMPULSE ON COUGH**
- ✓ Irreducible, **TENSE**, Tender, Shows **SUDDEN ENLARGEMENT**

TREATMENT

PRE-OPERATIVE

RESUSCITATION
RYLE, LINE, CATHETER,
FLUID, MONITOR

INTRA-OPERATIVE

- ✓ General anesthesia
- ✓ Viable vs. Non-viable intestine
- ✓ Deal with contents
- ✓ Herniotomy ,
Herniorrhaphy
- ✓ Closure

POST-OPERATIVE

- ✓ Sedation
- ✓ NPO
- ✓ Ryle suction + IV fluids
- ✓ Antibiotics
- ✓ Drains

TREATMENT OF STRANGULATED HERNIA

PRE-OPERATIVE

RYLE, LINE, CATHETER,
MONITOR

✓ RYLE :

- Prevent vomiting
- Prevent Aspiration
- Prevent post-operative paralytic ileus
- Asses amount of fluid loss
- Aspirate toxins

✓ CANNULA

- IV fluids
- Blood transfusion
- Pre-operative medications "morphia & Antibiotics"

✓ CATHETER

- Detection of urine output/hour

✓ MONITORING of Vital data

- Pulse, BP, temperature
- Urine output

INTRA-OPERATIVE

- ✓ General anesthesia
- ✓ Wide exploratory incision
- ✓ Open the sac, evacuate it from toxic fluid before division of constriction ring, grasp the intestinal loop & examine it (Viable vs. Non-Viable)
Then Deal with contents :

OMENTUM EXCISION

INTESTINE

Viable

Reduction
of hernia

NON-Viable

SMALL INTESTINE

LARGE INTESTINE

RT COLON

LT COLON

RESECTION &
ANASTOMOSIS

NB:

	VIABLE	NON-VIABLE
color	pink, red	black
luster	+ve	-ve
palpation	firm with good tone	floppy, soft
	Pulsating, contractile	non pulsating, Non contracting
if injured	bleeds	NO bleeding

Do Herniotomy , Herniorhaphy but NOT
Hernioplasty , Then closure in layers

POST-OPERATIVE

- ✓ Sedation
- ✓ NPO
- ✓ Ryle suction + IV fluids
- ✓ Antibiotics
- ✓ Drains

- ✓ Intra-operative lavage then Resection & Anastomosis
- ✓ Exteriorization of both ends from other incision & Anastomosis is done later after Improvement of general condition
(Low residue diet + enema + flagyl + neomycin)

OBLIQUE INGUINAL HERNIA		DIRECT HERNIA		FEMORAL HERNIA
		LATERAL	MEDIAL	
Definition	<u>Pathologically:</u> Protrusion of a VISCOUS within a peritoneal SAC through a DEFECT in abdominal wall <u>Clinically:</u> Painless swelling characterized by "READ" Reducible, expansile impulse on cough, on anatomical site of hernia, with a defect			
Incidence	MOST COMMON HERNIA - Young age, Male - RT side > LT side	Old age	Young age	3rd common - Female, 20-40 yrs. - RIGHT > LEFT
Etiology				
Predisposing factors	<u>Congenital:</u> un-obliterated processes vaginalis	Weakness of lower abdominal wall	Injury to Ilioinguinal	Rarely Cong. → NARATH's H.
Precipitating factors	<u>Acquired:</u> weak abdominal wall, ↑ Intra-abdominal Pressure	↑ Intra-abdominal pressure associated with Malgagne bulge	N.B. Paralysis in conjoint tendon	- Almost always ACQUIRED: 1) ↑ Intraabdominal Pr. 2) Weak abdominal wall
Pathology :				
Defect	Comes from the Internal ring lateral to inferior Epigastric artery	Bulges through lateral part of Hasselbach's triangle	Through medial part of Hasselbach's triangle	Through femoral ring (Below medial part of inguinal ligament)
Sac	inside the cord coverings, Antero-medial to vas deferens & vessels	NEVER descends to scrotum	May descend to scrotum	Passes downwards, forwards, upwards then laterally
Contents	Small intestine, omentum		Small intestine, omentum	
coverings	INGUINAL	SCROTAL	1) Fascia transversalis	1) Femoral sheath
	1) Internal spermatic fascia		2) External Oblique apponeurosis	2) Cribriform fascia
	2) Cremasteric fascia		3) Superficial fascia + Skin	3) superficial Fascia
	3) External oblique apponeurosis	3) External spermatic Ms.	2) Conjoint tendon	4) SC fat
	4) Camper, scarpa fascia	4) Dartos Ms.	3) Superficial fascia + Skin	5) Skin
	5) Skin			
Clinical picture : Symptoms → Painless swelling characterized by "READ"				
General	Signs of mesenchymal weakness, PPT factors & complications			
Local SWELLING	1) Inguinal or inguino-scrotal 2) Gives expansile impulse on cough 3) Descend → Downwards, forwards & medially 4) Reducible → upwards, backwards, laterally 5) Internal ring test POSITIVE	1) 2) 3) Forwards 4) Backwards 5) NEGATIVE	Direction of descent - Downwards - Forwards - Upwards & Lateral	
Complications & Investigations... See scheme				
Treatment	✓ Herniotomy → congenital OIH ✓ Herniorrhaphy	✓ Herniorrhaphy shouldice, marcy repair ✓ Hernioplasty by mesh ✓ Herniotomy is not usually needed. ✓ If patient isn't fit for surgery → Truss	✓ Low approach "Lockwood" ✓ Inguinal app "Lotheissen" ✓ Pre-peritoneal "McEvedy" ✓ Laparoscopic ✓ Truss is #	
- TTT of PPT - Surgical - Complic.	Indications : 1) Adults & elderly 2) Infection 3) Concomitant bowel resection Types: Marcy, Bassini, Shouldice ✓ Hernioplasty(Grafting): Prolene, Mersalin, PTFE mesh			

UMBILICAL HERNIA

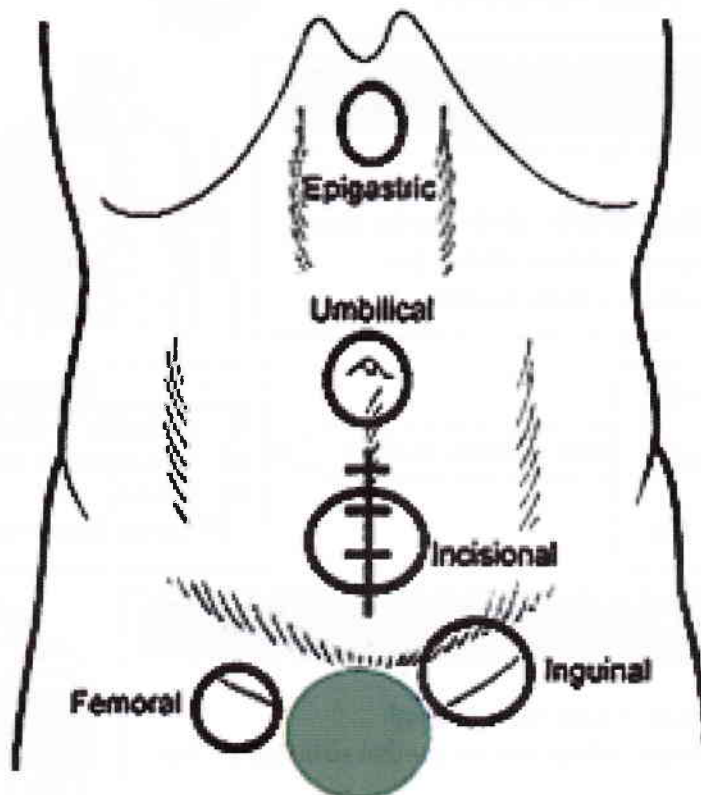
	CONGENITAL	INFANTILE	PARA-UMBILICAL
Definition	- Pathologically - Clinically		
Incidence	Since birth	Weeks-months after birth	Middle aged females .
Etiology	Failure of ALL or part of midgut to return to the abdomen	Weak Umbilical scar	↑ Intra-abdominal pressure (Chronic coughing, Obesity) - Weak anterior abdominal wall
Pathology :			
Defect AT ANTERIOR ABDOMINAL WALL	<5cm (exomphalous minor) >5cm (exomphalous major)	Exactly at umbilicus	- In Linea alba Just above umbilicus - Below umbilicus (less common)
Sac	Peritoneum	Peritoneum	MULTI-LOCULATED, adhesions, Narrow neck
Contents	- Intestine - Meckel's diverticulum - Any other abdominal viscera	- Omentum - Small Intestine	- Omentum - Small Intestine - Transverse column
Coverings	Amniotic membrane Wharton jelly (only in Exomphalous minor)	Stretched umbilical scar, extra-peritoneal fat	Skin ,SC tissue, Extra-peritoneal fat
Clinical picture: Symptoms: Painless swelling characterized by "READ"			
Signs:	Other associated anomalies	Phimosis	Signs of mesenchymal weakness, PPT factors, Complications
Complications	Rupture of sac, infection of intestine	Strangulation	- IRREDUCIBILITY (MOST COMMON) - HYDROCELE doesn't occur in para-umbilical hernia except if secondary to ascites - May be complicated by intertrigo
Treatment	- If Abdominal cavity can accommodate content: Primary closure under moderate tension - If can't accommodate contents: Skin flap closure - RECENTLY: Staged closure	- Reassurance & follow up - TTT. of PPT factors - Surgical correction (If large defect, >2yrs. Old, strangulation)	- Treat Intertrigo if present - Surgical repair : - Anatomical repair - Mayo's repair - if hernia is large → Post-op. Ventilator - Truss is # (Strangulation)

	EXOMPHALOUS MINOR	EXOMPHALOUS MAJOR
Defect	Small (<5cm)	Large (>5cm)
Sac	Small	Large
Content	✓ Loop of small intestine ✓ Meckels' diverticulum	Any abdominal viscera (e.g. LIVER, Bowel)
Cover	Layer of amniotic membrane + Wharton's jelly	Layer of amniotic membrane ONLY
Complications	Entangling of a loop of intestine during ligature	Rupture of sac & coverings → peritonitis
TTT	Reduce content → excise sac → Repair defect	URGENT SURGERY (cover with synthetic material)

	INCISIONAL HERNIA (VENTRAL HERNIA)	RECURRENT HERNIA	BURST ABDOMEN
Definition	Hernia at a site of previous abdominal incision		Disruption of abdominal incision
Incidence	Develops immediately or early Post-Operative	about 10-15 % within 1 year of Operation	
Etiology	 ☒ PRE-OPERATIVE - Weak abdominal Ms. - Obesity - Chronic cough - Chronic constipation - BPH - Chronic debilitating disease ☒ INTRA-OPERATIVE ↑ Trauma - Bad hemostasis - Too loose, too tight repair - Muscle Cutting - Closure with absorbable sutures (Ex: Catgut) ☒ POST-OPERATIVE - Wound infection - Vomiting, coughing - Early return to work - Persistent PPT factors - Paralytic ileus		
		☒ Incomplete removal of sac ☒ Missed sac ☒ Displacement prosthesis ☒ Prosthesis of inadequate size	☒ Swollen abdomen ☒ Abdominal sepsis
Clinical picture :			
Symptoms	History of etiology & Type of operation, timing, post-operative period		
General signs	Obesity, anemia, chest problems, BPHetc		
Local signs	☒ SCAR: - Vertical, transverse - Healing (1ry or 2ry) ☒ HERNIA: - Reducible, Expansile impulse on cough - Intertrigo ☒ ABDOMEN: - Divarication of recti - HSM, Ascites		RED SIGN "MOST IMP." ☒ Sero-sanguinous discharge ☒ >1 week after Operation ☒ Pt. feels as if something is giving way
Complications... as before			
Investigations			☒ LAB→C/S , CBC ☒ RADIO→ US,CT,X-ray
Treatment - TTT of PPT - Surgical - Complications	☒ Surgical repair : - Anatomical repair - Manigot repair - Cattell's repair - Tension free Hernioplasty ☒ If large hernia : - skin preparation (TTT of intertrigo) - Post-op. ventilator - Gradual pneumo-peritoneum	☒ Hernioplasty to avoid dissection through scar tissue	PRE-OPERATIVE ☒ Cover wound with sterile towel & warm saline ☒ Ryle, line, catheter, Abs INTRA-OPERATIVE ☒ Intestinal Loops are washed with saline ☒ Closure with Tension suture ☒ Abdominal binder

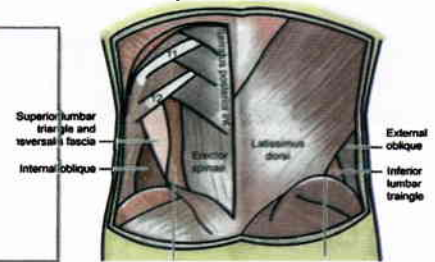
OTHER TYPES OF HERNIA

- 1) Enterocoele (= intestine)
- 2) Omentocele= epiplocele (= omentum)
- 3) Epigastric hernia
- 4) Incisional hernia
- 5) Lumbar hernia
- 6) Spigelian hernia
- 7) Littre's hernia (= Meckel's diverticulum)
- 8) Amian hernia (= appendix)
- 9) Richter's hernia (Gangrene without obstruction)
- 10) Maydl' hernia = W-hernia (Gangrenous loop inside the abdomen)
- 11) Sliding hernia (Urinary bladder, caecum, colon passing through the defect)
- 12) Incarcerated hernia (Intestinal lumen obstructed from inside by fecolith.)
- 13) Pantaloon hernia = Dual hernia(OIH + DIH on the same side)



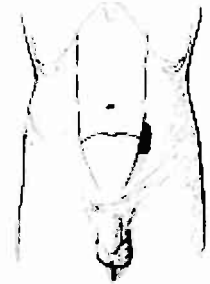
LUMBAR HERNIA

1. In superior or inferior lumbar triangle
2. Etiology : Congenital or assoc. with ms. Weakness
3. Large, wide neck, reducible, +ve impulse on cough
4. TTT: surgery or corset



SPIGELIAN HERNIA

4. Old female With Defect in the semi-lunar line at level of arcuate line
5. Lies beneath an intact external oblique aponeurosis
6. C/O : localized local pain without bulge
7. Narrow neck → liable to strangulation → TTT : anatomical repair
8. Investigations : → US, CT



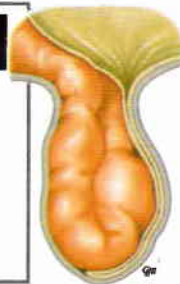
RICHTER'S HERNIA

- Content is a part of the circumflex of a bowel → Causes strangulation without obstruction



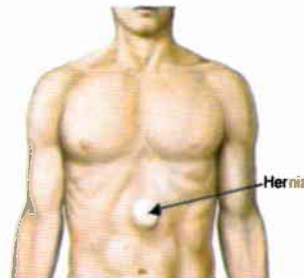
SLIDING HERNIA → INGUINAL HERNIA

- Pt. with long standing OIH
- Partially irreducible
- Visceral peritoneum forms a part of the sac
- Sure diagnosis is intra-operative
- If bladder is sliding → Double micturation



EPIGASTRIC HERNIA

- Separated from Umbilicus by an interval
- May be multiple
- Pt. may complain of DYSPEPSIA (D.D. peptic ulcer)
- May start as " fatty hernia of linea alba " (no impulse on cough, no sac) → D.D. Lipoma



Fatty hernia of Linea alba

- 1) Irreducible
- 2) No impulse on cough
- 3) Painful (incarceration of fat)

↑Size+ acquire omentum

Epigastric hernia

- 1) Reducible or History Of irreducibility
- 2) +ve expansile impulse on cough
- 3) Painless (If contain Greater omentum → Dyspepsia)

OBTURATOR HERNIA

- Females, C/O :
 - Pain and tenderness over medial side of thigh
 - Pain ↑ on doing extension, adduction or medial rotation of hip (**HOWSHIP SIGN**)
 - Absent adductor reflex in thigh (**HANNINGTON- KIFF SIGN**)
- Complications → referral to KNEE



- Contralateral inguinal exploration will be required in high percentage of infants & children with inguinal hernias.
- Infant inguinal hernias are associated with prematurity, male, sex, incarceration & right sidedness.
- The most frequent cause of recurrence of indirect inguinal hernia is low ligation of the sac.
- At the time of repair epigastric hernias, a careful search for other defects should be performed.



1. Young adult male complaining of painless mass in the inguinal region reaching the scrotum, reducible and gives expansile impulse on cough.

Oblique inguinal hernia.

2. Young adult male complaining of painful swelling in the inguinal region that was painless. The pain is stabbing and the swelling become tense and give no expansile impulse on cough.

Strangulated oblique inguinal hernia.

3. African baby 1 month old, presents with painless swelling at umbilicus that gives expansile impulse on cough.

Infantile umbilical hernia.

4. Multiparous female presents with painless swelling separated from the umbilicus by interval. There is also dyspepsia and heart burn.

Epigastric hernia VS Fatty hernia of Linea alba.

5. Patient with postoperative scar (especially midline and sub costal incisions) presents with painless swelling related to this scar, reducible & gives expansile impulse on cough.

Incisional hernia.

GIT (1) QUESTIONS



- Complication of oblique inguinal hernia

(Ain shams: 2005 - Azhar M: 2012 - Azhar F: 2008)

- Complications of hernia

(Azhar M: 2001 - Azhar F: 2004, 2009)

- Complications of umbilical hernia

(Azhar M: 2000)

- Classification of inguinal hernia

(Kasr: 2008)

- Diagnosis and management of strangulated hernia

(Kasr: 2008)



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Handwriting practice lines on the right side of the page, consisting of 20 horizontal dotted lines.

SURGI- TOONS

ESOPHAGUS & STOMACH



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ESOPHAGUS SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Diaphragmatic hernia
- GERD
- Esophageal carcinoma
- Motility disorders of Esophagus
- Traumatic lesions of Esophagus

DIAPHRAGMATIC HERNIA

CONGENITAL DIAPHRAGMATIC HERNIA

F. OF BOCHDALEK

- ✓ Most common in Infants
- ✓ Due to persistence of pleura-peritoneal canals
- ✓ Left side , Posterior

CLINICAL PICTURE:

Newborn with Dyspnea, cyanosis after birth ... with NO heart diseases

O/E :

- ✓ Scaphoid abdomen
- ✓ Ipsi-lateral chest (↓ air entry, ↑ Intestinal Sounds)

INVESTIGATIONS:

- ✓ Best : Gastrographin meal → stomach, Intestinal loops in chest cavity
- ✓ Plain x-ray → gas shadow of stomach in chest cavity , shift of mediastinum
- ✓ ABG → Hypoxia, Hypercapnea, acidosis
- ✓ Antenatal: polyhydramnios , U/S & Echo → Bowel in chest

TREATMENT → SURGICAL TTT

- ✓ Pre-operative :
NGT, Mech. ventilation, inhaled NO
- ✓ Intra-operative: reduction & Closure
- ✓ Post-operative: Ventilatory support

F. OF MORGAGNI

- ✓ Through opening of Internal mammary artery
- ✓ Right side, Anterior

CLINICAL PICTURE:

- ✓ Child → Recurrent Respiratory infection, cough, vomiting
- ✓ Adult → Intestinal obstruction

INVESTIGATIONS:

- ✓ X-ray → Air fluid level behind Sternum

TREATMENT → SURGICAL

- ✓ Trans-abdominal approach
- ✓ Reduction & Closure

PARA-OESOPHEGEAL HERNIA (ROLLING)

- ✓ True hernia Through Hiatus & Greater curvature of stomach herniated to Posterior Mediastinum ... Into posterior Mediastinum
- ✓ NO REFLUX ... Normal relation of cardio-esophageal Junction to diaphragm

CLINICAL PICTURE:

- ✓ If small → Asymptomatic
- ✓ If Large → Pressure manifestations
 - Esophageous: Dysphagia
 - Heart: Post-prandial pain, palpitation
 - Phrenic N.: Hiccough

COMPLICATIONS:

Rupture, Strangulation, Gangrene

INVESTIGATIONS:

- ✓ Barium Meal in Trendlenberg's position:
 - Herniation of stomach into chest
 - Gastro-esophageal junction in place
- ✓ Plain x-ray

TREATMENT → SURGICAL TTT

- ✓ SURGICAL TREATMENT
 - 1) Retract stomach Downwards
 - 2) Excision of hernia sac
 - 3) Repair of hernia defect

ACQUIRED SLIDING HERNIA

- ✓ Most common internal hernia
- ✓ Hernia of cardia.... Through esophageal hiatus in diaphragm .. into Posterior Mediastinum
- ✓ REFLUX Gastro-esophageal junction is displaced into chest
- ✓ Etiology: **UNKOWN** but may be due to..
 - 1) Short esophageous
 - 2) ↑ Intra-abdominal Pressure
 - 3) Wide Hiatus

Clinical picture:

Patient: Obese Female > 40 years

- ✓ Symptoms of GERD
- ✓ Complications :
 - Aspiration Pneumonia + anemia
 - Barret's esophagus + Stricture
- ✓ Part of ... **SAINT'S TRIAD**
 HIATUS HERNIA + DIVERTICULAR DIS
 + Chr. CALCULAR CHOLECYSTITIS

Investigations:

- ✓ Investigations of GERD
- ✓ Barium swallow, meal in trendlenberg position
 - Reflux of barium from stomach to esophagus
 - Part of stomach is found in chest

Treatment

- ✓ TTT of GERD → Life style modification, Drug therapy,
- ✓ Surgical TTT
(If Complications, Saint's triad are found)

GASTROESOPHAGEAL REFLUX (GERD)

REFLUX ESOPHAGITIS

NORMAL ANTI-REFLUX MECHANISM

LES Pressure = 10-25 mmHg, Gastric Pressure = 7 mmHg

- ✓ Angle of Hiss → Valvular effect
- ✓ Intra-abdominal Pr. → close Esophagus
- ✓ Rosette shaped mucosa
- ✓ Pinchcock effect of Hiatus of Esophagus
- ✓ Continuous release of Acetyl Choline from lower end of esophagus

ETIOLOGY OF GERD

- ✓ Most important → Sliding hiatus hernia
- ✓ Infants → Decreased Gastrin
- ✓ Adults → Smoking, alcohol, Obesity
- ✓ Scleroderma
- ✓ Try to pyloric stenosis

SYMPTOMS

- ✓ Heart burn :
 - Retrosternal burning pain
 - ↑ by heavy meals, lying flat
 - ↓ by standing upright
- ✓ Regurgitation
- ✓ Dysphagia: (esophageal Spasmstricture)
- ✓ Symptoms of Complications
 - Aspiration Pneumonia + anemia
 - Barret's esophagus → Pre-cancerous
 - Stricture (Schatzki's ring)
 - Bleeding from ulcer

SIGNS

- ✓ Bad nutritional state
- ✓ Bad Chest condition
- ✓ Anemia

BARRET'S ESOPHAGUS

- ✓ ↑ adenocarcinoma by 40 times
- ✓ TREATMENT: Extended Omeprazole with Follow up

SCHATZKI'S RING

- ✓ Reversible stricture due to reflux
- ✓ C/O: Dysphagia
- ✓ TTT: Anti-spasmodics

INVESTIGATIONS

- ✓ 24 hours ambulatory PH monitoring (BEST)
(PH < 4 For > 30 min in 24 hours)
- ✓ Esophageal manometry → LOW LOS pressure, peristalsis ...
(weak peristalsis → partial wrap, Good peristalsis → Total wrap)
- ✓ Upper GI endoscopy + Biopsy → Stricture with NO proximal esophagitis
- ✓ Barium swallow, meal in trendlenbergs position
- ✓ For complications: CBC → Microcytic, hypochromic anemia

TREATMENT OF GERD

LIFE STYLE

- ✓ Lose weight
- ✓ Small frequent meals
- ✓ Avoid tea, coffee, spirits, smoking, lying flat after meals
- ✓ Sleep with extra-pillows

MEDICAL

PROKINETICS

- ✓ ↓ Gastric acidity:
Omeprazole
(Reverse barret's esophagus)
- ✓ Regulating motility:
Metoclopramide

SURGICAL

TOTAL FUNDO- PLICATION "NISSEN"

- ✓ If Good peristalsis
- ✓ SE: GAS BLOAT \$

PARTIAL FUNDO- PLICATION

- ✓ If Poor peristalsis
- ✓ Less SE
(NO GAS BLOAT \$)

ESOPHAGEAL CARCINOMA

INCIDENCE

- ☑ 4% of GIT tumors
- ☑ Male, Old age 45-60 years

PREDISPOSING FACTORS

- ☑ Spicy food, smoking, spirits
- ☑ Barret's esophagus
- ☑ Tylosis A
- ☑ Plummer Vinson \$
- ☑ Papilloma, Adenoma

PATHOLOGY

- ☑ Site: LOWER THIRD IS INCREASING
- ☑ Macroscopic: proliferative, infiltr, Ulcerative
- ☑ Microscopic: Adenocarcinoma (lower 1/3)
> SCC (upper 2/3)
- ☑ Spread:
 - Early by Lymphatics
 - Most dangerous is DIRECT spread
 - Blood spread is rare & Late

SYMPTOMS

- ☑ Progressive dysphagia to
Solids > Fluids
- ☑ NB : Swallowing may be easier
- ☑ (sloughing of a part of tumor)
- ☑ Regurgitation, ↑ Salivation
- ☑ Loss of Appetite + Halitosis

SIGNS

- ☑ Cachexia
- ☑ Chest infection
- ☑ Signs of metastasis
→ LNs enlargement

COMPLICATIONS

- ☑ Mediastinitis
- ☑ Hematemesis
- ☑ Paralysis of diaphragm
- ☑ Pulmonary complications

INVESTIGATIONS

- ☑ FOR DIAGNOSIS
 - ENDOSCOPY + Biopsy + cytology
 - Barium Swallow → Rat tail appearance, Shouldering, irregular filling defect
- ☑ FOR STAGING
 - Endo-luminal U/Sshow extent of tumor & asses operability
 - Chest x-ray, U/S , CT scan, Bone scan
- ☑ PRE-OPERATIVE
 - CBC, LFT, KFT, Serum electrolytes, serum proteins

TREATMENT OF ESOPHAGEAL CANCER

OPERABLE 40%

PRE-OPERATIVE

- ☑ Nutritional → Hyperalimination
- ☑ Respiratory → TTT of chest infection,
Respiratory Exercise
- ☑ Hematological → Correction of Hb, Albumin

OPERATIVE

TRANSHIATAL OESOPHAGECTOMY

& STOMACH PULL UP

(Nowadays, Video assisted Technique is used)

INOPERABLE 60%

- ☑ Endoscopic Laser
- ☑ Self-expanding Metal stent
"WILSON COOK STENT"
- ☑ Radio, Chemo-therapy (5 FU)

POST CRICOID CARCINOMA

ETIOLOGY & PATHOLOGY:

- ✓ On top of **PLUMMER-VINSON'S**
- ✓ Site: Pharyngeal mucosa
- ✓ Squamous cell carcinoma

CLINICAL PICTURE:

- ✓ C/O: Pain in throat referred to Ear, **DYSPHAGIA "LATE"**
- ✓ **INSPECTION:** Bulge of Thyroid cartilage
- ✓ **PALPATION:** **MOURE'S SIGNS** (loss of Laryngeal click)

INVESTIGATIONS:

- ✓ **FOR DIAGNOSIS:** Pharyngoscopy, endoscopy + Biopsy
- ✓ **FOR STAGING:** CT, CXR, Bone scan
- ✓ **PRE-OPERATIVE:** CBC, KFT, LFT

TREATMENT:

- ✓ **OPERABLE :**
 - 1) Total laryngo-pharyngectomy with Stomach pull up
 - 2) Block dissection of LNs
 - 3) Permenant Tracheostomy
 - 4) Esophageal replacement
- ✓ **INOPERABLE:** Radiotherapy

WHAT ARE YOU
LOOKING AT?

NOTHING, I'M TRYING
TO SWALLOW
MY PILLS!



PLUMMER VINSON \$

ETIOLOGY & PATHOLOGY:

- ✓ Deficiency of IRON, VITAMIN B complex
- ✓ Site: Upper end of esophagus

CLINICAL PICTURE :

- ✓ Patient : Post-menopausal Female
- ✓ Symptoms : Retro-sternal pain, Dysphagia
- ✓ Signs : Koilonychia, Atrophic changes, Splenomegaly
- ✓ Complications : Pre-cancerous "POT-CRICOID CARCINOMA"

INVESTIGATIONS:

- ✓ CBC → Microcytic hypochromic anemia
- ✓ Gastric function tests → Achlorohydrria

TREATMENT:

- ✓ Iron, Vitamin B, Dilatation with an endoscope

PHARYNGEAL POUCH (ZENKER'S DIVERTICULUM)

Herniation of pharyngeal mucosa

Through **KILLIAN DEHISCENCE** ...between Thyropharyngeus Ms., Cricopharyngeus Ms.

- ✓ Pulsion diverticulae
- ✓ **LEFT SIDE, POST. TRIANGLE**

CLINICAL PICTURE:

- ✓ Patient: OLD male
- ✓ **SWELLING:** with eating, Compressible, leading to regurgitation of undigested food

COMPLICATIONS

- ✓ Carcinoma (0.3 %)

INVESTIGATIONS:

- ✓ **BARIUM SWALLOW**
- ✓ Endoscopy Perforation

TREATMENT:

- ✓ Small → Repeated dilatation
- ✓ Large → Diverticulotomy,
- ✓ **CRICO-PHARYNGEAL MYOTOMY (MOST IMP.)**
- ✓ Old Patient, HRG → Laser photocoagulation

MOTILITY DISORDERS OF ESOPHAGUS

ACHALASIA OF THE CARDIA

- ✓ Failure of relaxation of cardia Absent Iry peristalsis
- ✓ Theories: Idiopathic, Chaga's dis., Post-vagotomy achalasia, Auto-immune
- ✓ Macroscopic picture :
 - Upper segment → Hypertrophied, disorganized peristalsis , dilated & elongated (sausage shaped)
 - Lower segment → Normal, failure of relaxation, Spastic
- ✓ Microscopic picture :
 - Degeneration of Auerbach's Plexus

SYMPTOMS:

- PT : Obese Female > 40 years
- ✓ Dysphagia to fluids > Solids
- ✓ Bad mouth odour (Halitosis)
- ✓ Regurgitation & Retro-sternal pain

SIGNS

- ✓ Bad nutritional state
- ✓ Dehydration
- ✓ Chest infection

COMPLICATIONS

- ✓ Aspiration pneumonia, Diverticulae , Malnutrition
- ✓ MALIGNANT CHANGES : 3 % after 20 Years , discovered late

INVESTIGATIONS

- ✓ Esophageal Manometry → Pressure in high Pr. zone > 25 mmHg
- ✓ Barium swallow: Above diaphragm, Delayed evacuation , sigmoid esophageal, parrot's peak appearance
- ✓ Esophagoscopy + Biopsy: Narrow eccentric cardiac orifice "GOLF BALL APPEARANCE "
- ✓ For complications : CBC → anemia, leucocytosis



TREATMENT

- ✓ Medical sphincterotomy: Iso-sorbide binitrate, CCBs, Botulinum toxin
- ✓ Forceful dilatation by High Pneumatic Pressure Balloon
- ✓ Surgery: Esophago-myotomy :
Modified Heller's operation with Left Thoracotomy

DIFFUSE ESOPHAGEAL SPASM

High amplitude NON-peristaltic waves

ETIOLOGY:

- ✓ Stress, Neurosis, Esophageal Ischemia

CLINICAL PICTURE

- ✓ RETRO-STERNAL PAIN
DD: ISCHEMIC HEART DISEASE

INVESTIGATIONS

- ✓ Esophageal manometry → Non-peristaltic waves, ↑ Amplitude 14-200 mmHg
- ✓ Barium swallow :
 - Segmental spasms
 - CURLING, COCKSCREW ESOPHAGUS



TREATMENT

- ✓ Esophageal Myotomy with preservation of LOS
- ✓ Esophago-gastrectomy & Stomach pull -up

NUTCRACKER ESOPHAGUS

Peristaltic waves, ↑ Amplitude

CLINICAL PICTURE

- ✓ Abnormal GERD resistant to TTT

INVESTIGATIONS

- ✓ Esophageal manometry
 - Peristaltic waves
 - ↑ Amplitude 200 mmHg



TREATMENT

- as DES
- ✓ Esophageal Myotomy with preservation of LOS
- ✓ Esophago-gastrectomy & Stomach pull -up

TRAUMATIC LESIONS OF ESOPHAGUS

ESOPHAGEAL PERFORATION

ETIOLOGY:

- ☑ **SPONTANEOUS : BOERHAAVE'S \$**
- ☑ ACCIDENTAL
- ☑ IATROGENIC

MOST COMMON SITE

- a) 3-5 cm above Cardia, Left posterior aspect
- b) At level of Azygous vein

CLINICAL PICTURE

- ☑ Old alcoholic Male with severe Vomiting
- ☑ Dysphagia, Dyspnea, Chest pain, Mediastinal emphysema

INVESTIGATIONS

- ☑ Esophagogram " Gastrographin Swallow"
- ☑ Plain x-ray, Thoracocentesis

TREATMENT

CERVICAL PERFORATION

- ☑ NIL by mouth
- ☑ IV hyper-alimentation
- ☑ Drainage of Extravasated fluid
- ☑ Antibiotics
- ☑ Surgical closure of perforation

THORACIC PERFORATION

- ☑ If Early : Suture perforation, chest drainage
- ☑ If LATE : esophagectomy & Stomach pull up

POSTCORROSIVE ESOPHAGEAL STRICTURE

ETIOLOGY, PATHOLOGY

- ☑ Ingestion of Alkalies → Liquefactive necrosis
- ☑ Acids → Coagulative necrosis

CLINICAL PICTURE

- ☑ History of ingestion of causative material
- ☑ General → Toxicity, high fever, Shock
- ☑ Local → Burns, chest pain
- ☑ Complications:

- Shock
- Laryngeal edema, chest infection
- Malignancy transformation
- Perforation → mediastinitis

TREATMENT

EMERGENCY TTT

- ☑ ABC measures...
- ☑ Give patient milk to dilute corrosive effect
- ☑ Anti-shock, Antibiotics
- ☑ Steroids → decrease stricture, edema
- ☑ # GASTRIC LAVAGE
- ☑ # ORAL INTAKE for 1-2 weeks
- ☑ URGENT INVESTIGATIONS :
 - Barium Swallow.. Gastrographin
 - Endoscopy

DEFINITIVE TTT

- ☑ Repeated dilatation
- ☑ Surgery :
 - Trans-hiatal Blunt
 - Esophagectomy + Esophageal replacement

MALLORY WEISS \$

CLINICAL PICTURE

- ☑ Old alcoholic male presented by Hematemesis after severe vomiting
- ☑ Treatment :

IN MANY CASES..

BLEEDING STOPS SPONTANEOUS

- 1) anti-shock, antacids, H₂ Blockers
- 2) Endoscopic Photocoagulations
- 3) Suturing
- 4) Embolization

STOMACH SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Diaphragmatic hernia
- GERD
- Esophageal carcinoma
- Motility disorders of Esophagus
- Traumatic lesions of Esophagus

NEONATAL VOMITING

(CHPS)

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

DEFINITION: ↑ Thickness of pylorus $> 8\text{mm}$ (Normal: 4mm)

ETIOLOGY:

UNKNOWN ... may be due to Hypertrophy of pylorus, Achalasia of pylorus

CLINICAL PICTURE:

☑ TYPE OF PATIENT:

First infant, Boy, 3rd -4th week, **NEVER AT BIRTH**

☑ C/O: Mother complains that her infant has **PROJECTILE,**

NON-BILE STAINED VOMITING, Failure to thrive

☑ **GENERAL SIGNS:** Weight loss, Bad chest

☑ **Local signs:** Visible peristalsis + **OLIVE LIKE LUMP** **"TUMOR SIGN"** (palpated during nursing)

☑ **COMPLICATIONS:**

1) **Metabolic alkalosis (HYPOKALEMIC, HYPOCHLOREMIC)**

2) **Paradoxical aciduria**

3) Dehydration, Tetany, Chest infection, Aspiration pneumonia

INVESTIGATIONS:

☑ U/S thickening of pylorus + dilated stomach

☑ Gastrograffin: **STRING SIGN** (persistent narrow pyloric canal)

☑ Electrolytes:

a) ↓ Na, K, Cl, Ca, H⁺

b) ↑ Total acidity (STOMACH), Paradoxical Aciduria (URINE)

Treatment:

☑ **CORRECT GENERAL CONDITION**

- CORRECTION BY **SALINE**: NaCl (until urine is normal) → KCl

- TPN, NG wash by saline

☑ **RAMSTED PYLOROMYOTOMY**



DUODENAL ATRESIA

AGE:

Soon after birth

ETIOLOGY:

☑ True Atresia

☑ False Atresia due to:

♣ Annular pancreas

♣ Band of Laad → Volvulus neonatorum

♣ **WILKIE disease**

ال superior mesenteric ال طالع

و ضاغط على ال duodenum

WILKIE'S TRIAD :: 3 CHRONIC ::

1) Chronic PU

2) Chronic Cholecystitis

3) Chronic Appendicitis

INVESTIGATIONS:

☑ X-ray → **DOUBLE BUBBLE SIGN**

TREATMENT:

☑ R&M → Duodeno-jejunostomy



ACUTE PEPTIC ULCER

ACUTE EROSIVE GASTRITIS

ACUTE HEMORRHAGIC GASTRITIS

Etiology & Pathology:

طالب طب يحب الشطة و عنده صداع مزمن و بياخذ له أسبرين و حصلته حادثة جامدة زى فيرجينيا جميلة الجميلات

	MULTIPLE EROSIONS	TRUE STRESS ULCER
CAUSES	Non-steroidal	☒ ICU patients ☒ Severe trauma ☒ Major burns ☒ Endotoxic shock
PATHOLOGY	☒ SITE: Body & fundus of stomach ☒ Multiple, shallow, punched out ☒ Vary in size from 1mm to 1cm ☒ Usually limited to mucosa, sub-mucosa	Multiple erosions that if Not recognized & Treated → Coalesce → ACUTE HEMORRHAGIC GASTRITIS



Clinical picture:

- ☒ C/O → History of the cause then Hematemesis , melena, Epigastric pain
- ☒ O/E → Epigastric Tenderness
(NO REBOUND TENDERNESS as pathology is limited to mucosa)

Investigations:

- ☒ **URGERNT ENDOSCOPY** → Visualize Ulcer & Congested Mucosa

Treatment:

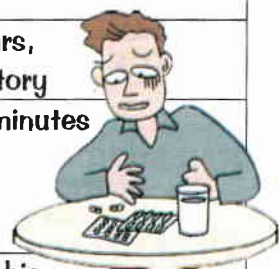
- ☒ **CONSERVATIVE..**
 - 1) Ryle, line, catheter, IV fluids, monitor of vital data
 - 2) Gastric lavage by Cold saline, Anatacids
 - 3) IV Cimetidine or Omeprazole, If failed → IV Vassopressin
- ☒ Endoscopic injection, Laser photo-coagulation
- ☒ **SURGERY ... (If medical TTT. failed):** Generous Gastrectomy, leave a small part of fundus to anastomose with the intestine

CHRONIC PEPTIC ULCER

ETIOLOGY:

- ☑ Most common → **H. PYLORI INFECTION**
- ☑ Genetic → Blood group "O", "A"
- ☑ Irritant food, Smoking, Drugs (NSAIDs) طالب طب
- ☑ ↑ Vagal tone رجل أعمال
- ☑ Endocrine diseases → ZE^s , Hyperparathyroidism
- ☑ Chemical, mechanical, Trauma **"MAGEN-STARRUSSE"** (Ulcer on lesser curvature)

PATHOLOGY, CLINICAL PICTURE:

		DUODENAL ULCER	GASTRIC ULCER
PATHOLOGY	NUMBER	Single	
	SITE	1 st inch of 1 st part	Lesser curvature, Pre-pyloric
	SIZE	Small	Larger
	SHAPE	Round or Oval	
	FLOOR	Deep	
	BASE	Indurated	
	EDGE, MARGIN	Sloping → Punched out later	
	CLINICAL PICTURE		
Type of patient	Male, 25-40 years, Blood Group "O", +ve Family history	Male, 40 years, -ve Family history	
PAIN & VOMITING	▪ 2- 2&1/2 hours after meals ▪ Nocturnal pain ▪ ↓ by eating, Buffers ▪ Periodic ... "spring, autumn"	▪ Immediately or 30 minutes after meals ▪ ↓ by vomiting	
Appetite	Increased	Sitophobia	
Weight	Weight Gain	Weight loss	
Tenderness	Epigastric to the Right side	Epigastric in Midline	
POINTING SIGN	Patient can localize site of the pain with 1 finger		

COMPLICATIONS:

Perforation	Fibrous Contracture (pyloric stenosis, Hourglass stomach)	Recurrence
Bleeding	Resistance	Malignancy in GU

INVESTIGATIONS:

- ☑ BEST → **UPPER GI ENDOSCOPY** (in GU → + 4 punch Biopsy)
- ☑ Barium Meal
 - DU → Ulcer niche + Trifoliate deformity
 - IF PYLORIC STENOSIS → **SOAP DISH APPEARANCE**
 - GU → Ulcer Niche + Ulcer crater
 - IF FIBROUS CONTRACTURE → **HOURLASS STOMACH**
- ☑ For Complications:
 - Bleeding → CBC (Anemia), Benzidine test
 - Recurrence (e.g. ZE^s → Gastrin level in blood, Octeriotide test, CT)



TREATMENT OF PEPTIC ULCER

TTT OF CAUSE

- ✓ ZEs
- ✓ Hyperparathyroidism

TTT OF PEPTIC ULCER

LIFE STYLE MODIFICATIONS

- ✓ Rest
- ✓ Small frequent meals
- ✓ Avoid irritant foods
- ✓ Avoid irritant drugs
- ✓ Avoid smoking, alcohol,

TTT OF COMPLICATIONS

- ✓ Perforation
- ✓ Bleeding
- ✓ Fibrous contracture
- ✓ Recurrence
(= TTT of cause)
- ✓ Malignancy

MEDICAL THERAPY

- ✓ Triple therapy for 10 days :
Omeprazole + Metronidazole
+ Clarithromycin

Continue with omeprazole for 6-8 weeks

REPEAT ENDOSCOPY

HEALING

Stop the morning dose

If healing ... stop drugs after 2 months

NOT HEALING

GU

GASTRECTOMY

DU

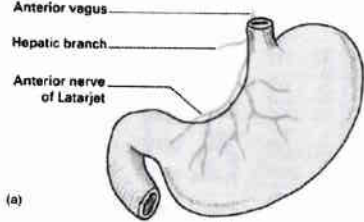
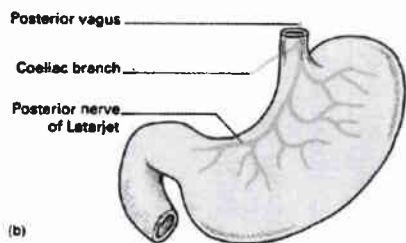
Continue medical treatment for another 6 months

HEALING

NOT HEALING

- ✓ VAGOTOMY & PYLOROPLASTY
- ✓ Highly selective Vagotomy
- ✓ Seromyotomy

VAGOTOMY

	بنقطع إيه ؟	هنخسر إيه ؟	إيه النتائج ؟	إيه مصير العيان ؟
TRUNCAL VAGOTOMY  	كل حاجة Trunk of Ant. & Post Vagus	- Hepatic Br. - Celiac Br. - Crow's Foot	Hepatic Br. - Gall stones (dyskinesia of sphincter of oddi) Coeliac Br.: - Distension of Stomach - Repeated episodes of Infective Diarrhea Crow's foot : - Loss of innervation of pylorus Others Incomplete procedure → Recurrence	⊖ Pyloroplasty (Mickulicz technique) ⊖ Gastro-Jejunostomy : 1) Posterior, 2) Retrocolic, 3) Isoperistaltic
SELECTIVE VAGOTOMY	Ant. & Post. Nerve of Latarjet	Crow's foot	Loss of innervation of pylorus	Pyloroplasty → Diarrhea, dumping
HIGHLY SELECTIVE VAGOTOMY	Branches innervating body of Stomach stopping at Incisura (spare Br. Of pylorus) و بينفد ال Ant. & Post. Nerve of Latarjet		ال Pylorus فتح فبقينا مش محتاجين Pyloroplasty إذن مغيث Diarrhea	Necrosis of Lesser Curvature in 0.5 % Contra-indications : - PU + Gastric outlet \$ - PU in Fundus - Cigarette chain smoking - Perforated PU
SERO-MYOTOMY	نسيب عرض صباع و نقطع ال Serosa & Musculosa		No Necrosis on Lesser Curvature	Resolution

GASTRECTOMY

COMPLICATIONS OF PARTIAL GASTRECTOMY

Antrectomy	50 % of stomach
Partial gastrectomy	65 % of stomach
Subtotal Gastrectomy	80 % of stomach
Total Gastrectomy (in cases of Lymphoma)	100 % of stomach

ANASTOMOSIS AFTER PARTIAL GASTRECTOMY	
End to end Gastro-Duodenostomy (Billroth 1)	SE : Leakage of juice
Side to side Gastro-Jejunostomy (Billroth 2)	SE: Blind loop \$ → Stasis
End to SIDE Gastrojejunostomy (Polya)	SE: Dumping, Blind loop \$
Polya with valve	

OPERATIVE COMPLICATIONS

- ☒ Complications of anesthesia
- ☒ Primary Hemorrhage
- ☒ Injury:
 - Pancreas → Pancreatitis
 - CBD → Obstructive Jaundice
 - Spleen → Bleeding
- ☒ Infection

POST-OPERATIVE COMPLICATIONS

EARLY

- ☒ Hemorrhage
- ☒ Leakage from anastomosis
- ☒ Duodenal stump blow-out
- ☒ Paralytic ileus
- ☒ Acute Gastric dilatation
- ☒ Sub-phrenic collection
- ☒ Pulmonary complications

LATE

- ☒ Post-gastrectomy \$
 - Nutritional \$
 - Afferent Loop \$
 - Post-cibal \$
- "DUMPING SYNDROME"
- ☒ Recurrence
- ☒ Gastro-jejuno-colic fistula
- ☒ Biliary reflux
- ☒ Stone of GB
- ☒ ↑ Risk of cancer



COMPLICATIONS OF PEPTIC ULCER

ACUTE PERFORATION OF PU

✓ 90 % in **DU**: **Anterior wall** ulcers

✓ PDF : قصة طالب الطب

✓ Clinical picture :

- 1) Stage of chemical peritonitis → Acute pain in Epigastrium
- 2) Quiescent stage → Pain↓ and patient APPARENTLY improves
- 3) Septic peritonitis → Generalized peritonitis + Toxemia

✓ **ABNORMAL PRESENTATION** → May give picture simulating appendicitis :

Fluid from perforation runs on the para-Colic gutter to the caecum

لو في عملية و أنا بشيل الزائدة و لقيت فيه خضراء افتح و أشوف خرم

✓ Investigations : قاعدة خرم في البطن

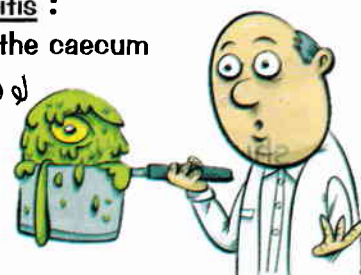
♣ Plain x-ray abdomen ERECT → air under diaphragm

♣ US, CT → Fluid in peritoneum

♣ Aspiration test → Bile stained alkaline fluid

** NB: Serum amylase may be elevated (800 somogi)

♣ For Complications → CBC, KFT, Electrolytes

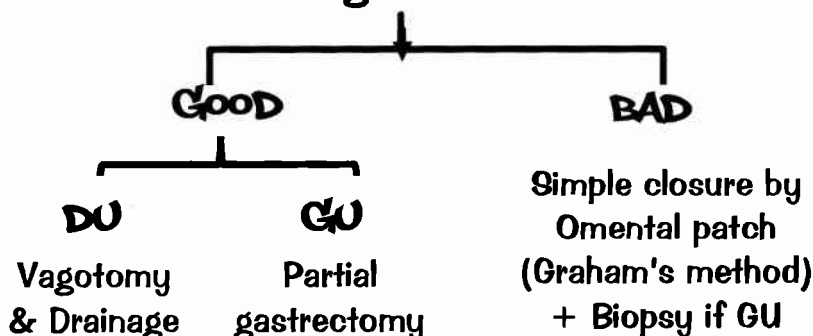


TREATMENT

Resuscitation & Monitoring → Ryle, line, catheter, fluids, monitoring ...

EMERGENCY OPERATION: PERITONEAL TOILET

ACC. to general condition



Then Draining the Peritoneum, Good Post-operative care

SUB-ACUTE PERFORATION

✓ Perforation after 48 hours from Activity → Mass

✓ Investigations → U/S

✓ TTT:

✓ Conserve until mass subsides then surgical TTT

✓ If abscess: Drainage → conserve until mass subsides → surgical TTT.

CHRONIC PERFORATION

✓ Pt. with PU who refused surgery → Pain becomes persistent & radiating to back

✓ TTT: DU → Vagotomy, Pyloroplasty..GU → Gastrectomy

COMPLICATIONS OF PEPTIC ULCER

BLEEDING PEPTIC ULCER

☑ 3 categories :

- 1) Mild bleeding → granulation tissue
- 2) Moderate bleeding → Small vessel
- 3) Severe bleeding → Gastro-duodenal Artery

☑ Clinical picture :

- C/O → History of Ulcer followed by Hematemesis, Melena, BPR
- O/E → Shock, Anemia, Epigastric tenderness

☑ Investigations :

- Urgent GI Endoscopy after resuscitation
- If failed → Angiography
- Laboratory → CBC, KFT, LFT, Electrolytes

TREATMENT :

R&M → Ryle, line, catheter, fluids, monitoring ...

URGENT ENDOSCOPY

(Laser coagulation, thermal coagulation,
Injection of alcohol)

- IV omeprazole
- Antacids
- NG lavage by cold saline



SURGICAL TTT (Bleeding >2L, Failure of TTT)

- DU → Vagotomy, Pyloroplasty, under running sutures for hemostasis, Gastroduodenal artery may require ligation
- GU → Gastrectomy

FIBROUS CONTRACTURE

DU : PYLORIC STENOSIS

شبه الـ CHPS لكن من غير زيتون
قصة واحد كان عنده DU لكن حلوف و
معملش العملية.. بعد فترة جه يشكى إن
بطنه منفوخة و بيرتاج لما يرجع و الترجيع
كثير بيرجع أكل اليوم السابق



INVESTIGATIONS

BA MEAL

- ✓ Dilatation
- ✓ **SOUP DISH APPEARANCE**
- ✓ Delayed emptying

ENDOSCOPY & BIOPSY

- ✓ Exclude malignancy

LAB

- ✓ CBC
- ✓ KFT
- ✓ Electrolytes

TREATMENT:

PRE-OP

- ✓ TTT of Chest infection
- ✓ Fluid & Electrolytes imbalance
- ✓ Blood transfusion
- ✓ Diet
- ✓ Gastric lavage

OPERATION

- ✓ Truncal vagotomy
- ✓ Gastro-jejunostomy

GU : HOURGLASS STOMACH

RECURRENT PEPTIC ULCER

✓ Etiology :

- ♣ **مشاكل أمراض**: ZES, Hyperparathyroidism
- ♣ **مشاكل عمليات**: Criminal N. of Grassi, inadequate gastrectomy, drainage
- ♣ **مشاكل أدوية**: NSAIDS, Corticosteroids

✓ Most important investigation is to **SEARCH FOR THE CAUSE**

- ♣ ZE Syndrome → Gastrin
- ♣ Hyperparathyroidism → Calcium, Phosphorus
- ♣ H. Plyori → C₁₄ Breath test, serology
- ♣ Gastric Function tests → **INSULIN TEST (HOLLANDER'S TEST)**

أشوف العملية اللي عملتها نافعة ولا لا

HELICOBACTER PYLORI

- ✓ Micro-aerophilic, Spiral, Flagellated
- ✓ Most common Bacterial infection in humans
- ✓ Diagnosis :
 - a) Gastric biopsy → Culture on Skirrow's medium
 - b) Antibodies in serum
 - c) Carbon (C₁₄) Breath test: ↑CO₂
- ✓ Treatment: **TRIPLE THERAPY**
Omeprazole, metronidazole, Clarithromycin



CANCER STOMACH

INCIDENCE:

- ☑ 2nd most common tumor
- ☑ Age & Sex → Male, 45 years

PREDISPOSING FACTORS:

- ☑ Chronic lesions → H.Pylori, Atrophic Gastritis, Benign tumor
- ☑ Chronic irritation → Spicy food, Spirits, Smoking
- ☑ Hereditary :
 - Family history, Fatal, Pernicious Anemia
 - Blood group "A", Bad prognosis

PATHOLOGY:

- SITE → Most common site is LOWER 1/3 ... (60%)
- MACROSCOPIC :

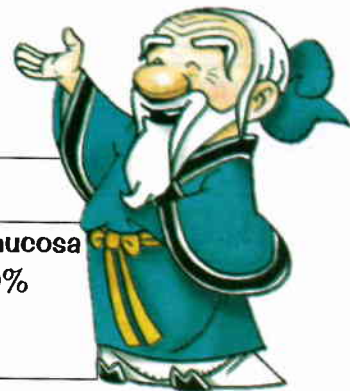
	Site	Differentiation
CAULIFLOWER	in Body & Fundus	well differentiated
ULCERATIVE	In Pylorus, lesser curvature	Moderately differentiated
INFILTRATING	Diffuse	Poorly differentiated
COLLOID TYPE	▪ PRIMARY → SIGNET RING appearance	"BAD PROGNOSIS"
	▪ SECONDARY → COLLOID degeneration	"GOOD PROGNOSIS"

- MICROSCOPIC :

- 1) ADENOCARCINOMA (95%)
- 2) Squamous cell carcinoma
- 3) Anaplastic carcinoma

JAPANESE CLASSIFICATION:

EARLY	LATE
▪ Limited to mucosa, submucosa ▪ 5 years survival → 90% ▪ Diagnosed by ..	▪ Involves muscularis mucosa ▪ 5 years survival → 10%
"SCREENING PROGRAMMES"	



SPREAD:

- Direct → Duodenum, Esophagus
- Blood → Liver "BLBL"
- Lymphatic → lately Virchow LNs++
- Transcelomic:
 - 1) Krukenberg's tumor (Ovaries)
 - 2) Blumer's Shelf (doughs pouch)

MANAGEMENT OF CANCER STOMACH

TYPE OF PATIENT:

Male, 45 years

CLINICAL PICTURE 5 GROUPS

DYSPEPSIA	CACHEXIA	MASS	OBSTRUCTION	METASTASIS
- Unexplained dyspepsia to Meat >2 weeks - Resistant to TTT. - Pain becomes persistent.	Loss of appetite & weight	DD: - Cancer stomach - Cancer colon - Cancer Panc. - Hepatoma	Dysphagia, Vomiting	Liver metastasis

INVESTIGATIONS

▪ DIAGNOSIS :

▪ Upper GI endoscopy & Biopsy

▪ Barium Meal:

1) Irregular filling defect, Ulcer niche out of Ulcer-bearing area, Linitis plastica.

2) In Trendelenberg's position → shows Fundus containing Irregular filling defect

3) Post -evacuation → Carmen meniscus sign

▪ STAGING → Endo-Luminal U/S, Abdominal U/S, CT scan

▪ FOLLOW UP → TUMOR MARKERS (CEA, CA 19-9, CA 72-4)

▪ PRE-OPERATIVE → CBC, KFT, LFT, Electrolytes

TREATMENT

OPERABLE	IN-OPERBLE
TOTAL Radical Gastrectomy (Japanese School)	- Adenocarcinoma → Radio, chemotherapy Insensitive - If Resectable → Palliative Partial Gastrectomy - If Irresectable → Palliative Gastro-jejunostomy, Celestin tube

ENGLISH SCHOOL

- UPPER 1/3: Esophago-gastrectomy, anastomosis by Esophago-jejunostomy by Roux-en-Y
- MIDDLE 1/3: Total Radical Gastrectomy, Esophago-jejunostomy by Roux-en-Y
- LOWER 1/3: Lower Radical partial Gastrectomy, Anastomosis by Polya or Polya with valve



OESPHAGUS

- ❖ The normal pressure of the LOS is 30-40cm H₂O
- ❖ Nissen, Belsey, Hill operations all are effective for TTT of GE reflux
- ❖ Surgery is the best line for TTT of ulcerative carcinoma at cardia of esophagus.
- ❖ In diaphragmatic inflammation, pain is referred to C3 – C5.



STOMACH & DUODENUM

- ❖ Congenital atresia of duodenum usually involves neighborhood of ampulla of Vater
- ❖ Gastrin secreting G cells are present in pyloric antrum
- ❖ Regarding the location of gastric ulcers : A- type 1 :ulcer along the lesser curvature
- ❖ B-type 2 :2 ulcers present –one gastric ,one duodenal
- ❖ C-type3: pre pyloric ulcer
- ❖ D-type 4: proximal gastro-oesophageal ulcer
- ❖ Incidence of recurrent ulcer is the highest with Gastro-enterostomy
- ❖ Deterioration of patients after gastro-jejuno-colic fistula is due to Jejunal contamination by colon content
- ❖ Gastro-jejuno-colic fistula is best diagnosed by Barium enema
- ❖ Diffuse B cell lymphoma is the commonest variety of gastric lymphoma followed by MALT
- ❖ Stomach is the most common site for lymphoma in the GIT
- ❖ Most of MALT lymphoma are low grade malignancy
- ❖ GIST:
 - 1- Are known previously as leiomyoma and leiomyosarcoma
 - 2- Originate from interstitial cell of Cajal, Stomach is the most common site for it is appearance {50-70%} followed by small bowel then Esophagus, colon and rectum
 - 3- Surgery is the definitive therapy for it and the only effective Non-surgical therapy for it is Imatinib mesylate
- ❖ Krukenberg tumor of ovary is common with colloid carcinoma of the stomach
- ❖ Leather bottle stomach occurs due to Scirrhus form of cancer stomach
- ❖ The landmark distinguishing pyloric canal from 1st part duodenum is veins of Mayo
- ❖ Bariatric surgery could be appropriate for patient with a BMI of 35 to 40 with no co morbidities or BMI of 30 to 35 with significant co morbidities such as DM
- ❖ There are 3 major types of weight loss surgeries being done for morbid obesity :
 - Restrictive bariatric procedure which includes
 1. Adjustable gastric bands
 2. Vertical band gastropasty
 - Malabsorptive weight loss procedure
 1. Biliopancreatic diversion
 2. Duodenal switch
 - Mainly Restrictive Mildly Malabsorptive bariatric procedure
 1. Roux en Y gastric bypass

OESPHAGUS

1. Mostly obese female more than 40 years old presents with retrosternal chest pain simulating anginal pain increases with fatty food and lying flat, decrease by standing upright.

GERD.

2. Old male complaining of continuous rapidly progressive dysphagia more to solid than fluids and regurgitation.

Cancer esophagus.

3. Old male complaining of dysphagia and swelling in the neck, when he compresses this swelling regurgitation of undigested food occurs.

Pharyngeal pouch.

4. Male or female middle aged complaining of dysphagia to fluids more than solids of gradual onset intermittent course of long duration and postural regurgitation of alkaline foul smelling fluid.

Achalasia of the esophagus.

5. Male or female presents with sudden onset of severe dysphagia, severe chest pain, mediastinal emphysema and dyspnea.

Esophageal perforation.

STOMACH & DUODENUM

1. Male or female with history of smoking, spicy food (or any PDF) presents with sudden severe epigastric pain and hematemesis.

Acute erosive gastritis.

2. Male 25-40 years good health complaining of burning or stabbing pain 2-3 hours after meals above the umbilicus relieved by eating.

Chronic duodenal ulcer.

3. -Male 35-45 years usually thin complaining of burning or stabbing abdominal pain immediately or 1/2 to 1 hour after meals in midline or just to the left relieved by fasting or vomiting.

Chronic gastric ulcer.

4. Old male with unexplained dyspepsia resistant for treatment for more than 2 weeks.

Cancer stomach.



GIT (2) QUESTIONS



ESOPHAGUS:

- Cancer esophagus Aetiopathology, prognosis, C/P, Investigations, treatment

Kasr: 2007, Kasr: 2011

- A mother brings her --- years old child to the ER with history of corrosive ingestion: Describe the first aid , sequelae and definitive management

Kasr: 2009

- GERD : C/P & management

Ain shams: 2004, Azhar F: 2009

- Achalasia of the cardia

Azhar F: 2010

STOMACH:

- Complications of chronic DU, PU, surgical TTT, Clinical picture, Management

Azhar F: 2008, 2005 - Azhar M: 2006, 2001

Azhar F: 2009, Azhar M: 2010

- Cancer stomach: Presentation, Cases, Diagnosis, Treatment

Azhar F: 2009- Kasr: 2008,

Azhar M: 2003, Kasr: 2008

- CHPS

Azhar F: 2010 - Azhar M: 2009-

Ain shams: 2009 -Kasr: 2008

- Pyloric Obstruction in adult

"C/P, Investigations, complications & Treatment"

Ain shams: 2009



SURGI- TOONS

LIVER & PORTAL HYPERTENSION



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LIVER SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Liver trauma
- Liver Infections
- Pyogenic liver abscess
- Benign Liver tumors
- Hepatocellular carcinoma
- Liver Metastasis

LIVER TRAUMA

2nd MOST COMMON SOLID ABDOMINAL ORGAN TO BE INJURED (SPLEEN IS THE 1ST)

Predisposing Factors

- ☑ Liver enlargement: This makes it more liable to trauma.
- ☑ Diseases of the Liver: which make it soft.

Etiology

- Open:
 - Gun-shot wounds.
 - Puncture due to stabbing.
- Closed:
 - Direct trauma: e.g. motor car accident & falling from a height.
 - Indirect trauma: fracture ribs.
 - Spontaneous rupture: with pathological liver.
- Iatrogenic: e.g. PTC or liver biopsy.

Pathology

Types of ruptured liver:

- Sub-capsular hematoma.
- Superficial tear(s).
- Deep tear(s).
- Avulsion of a pole of the liver.
- Complete depulping of the liver.
- Injury of a vascular pedicle → The most difficult injury is main hepatic veins
- Hemobilia.



Complications

1. **HEMORRHAGE** (Internal or external)
2. Infarction of liver tissues due to occlusion of liver blood supply by hematoma or abscess.
3. Biliary leakage → biliary peritonitis
4. Associated abdominal or thoracic injuries.

Clinical Picture

POLYTRAUMATIZED PATIENT

- ☑ History of trauma to the upper abdomen or lower chest followed by abdominal pain.
- ☑ General Signs (picture of hypovolemic shock)
 - 1) Rapid weak pulse, hypotension & subnormal temperature.
 - 2) Cold extremities & pallor.
- ☑ Local Examination
 - Inspection → Bruises in the Rt. Hypochondrium, Fracture of the Rt. lower ribs, Rigidity.
 - Palpation → Tenderness & guarding in the Rt. Hypochondrium, Rebound tenderness.
 - Percussion → shifting dullness.
 - Auscultation → ↓ intestinal sounds.
 - DRE → Fullness in the recto-vesical pouch & Douglas pouch.

INVESTIGATIONS:

- ☑ **U/S, CT SCAN (MOST IMPORTANT)** → free blood & hematoma, pathological types and injuries to other organs.
- ☑ Plain X- ray:
 - Fracture ribs, Elevated Rt. copula of the diaphragm, Obliterated psoas shadow, Multiple fluid levels.
- ☑ Selective hepatic angiography
- ☑ Diagnostic peritoneal lavage (DPL) ... (If there's NO time for other investigations)
- ☑ Laboratory investigations → KFTs, LFTs, FBS, electrolytes, CBC.

Treatment**Management of poly-traumatized patient (ATLS)**

☒ Pre-hospital management ABCD

☒ Hospital management

- Primary survey: ABCD
- Secondary survey:
 - ☐ Head to toe examination.
 - ☐ Resuscitation & monitoring.
 - ☐ AMPLE History.
 - ☐ Investigations

☒ Preoperative Preparation

- Blood transfusion and morphia

☒ Immediate Laparotomy

- Adequate exposure of the abdomen
- Systematic exploration of the abdomen.
- Dealing with different types of injury
- The priority is to arrest bleeding:
 - Temporary packing of the bleeding area
 - PRINGLE'S MANEUVER + fresh frozen plasma.
 - **SUTURING LIVER TEARS SHOULD BE AVOIDED**

(If deep tear → deeply placed mattress sutures supported by a pad of omentum)

- If Hematoma → ligate damaged vessels and ducts and excise dead tissues.
- Multiple intra-peritoneal drains: to avoid collections of blood and bile.
- Prophylactic antibiotics.

N.B.

- 1) If hemo-dynamically stable patients, Blunt trauma → CONSERVATIVE TTT
Close observation of vital data, Hb\4 hours and daily U\S.
- 2) Penetrating injuries → Exploration

Prognosis

- ☒ Mortality rate of liver injury → 15 – 20 %.
- ☒ if three organs are injured → 70%

LIVER INFECTIONS

HYDATID DISEASE

AMOEBIĆ ABSCESS

ORGANISM :

- ☑ Echinococcus granulosus
- ☑ Echinococcus Multi-locularis

HOSTS :

- ☑ Human is an accidental intermediate host
- ☑ Cats & dogs are definitive hosts

PATHOLOGY:

- ☑ SITE: ... Right lobe
- ☑ NUMBER Solitary
- ☑ LAYERS OF CYST:
 - 1) Adventitia (PERICYST)
 - 2) Laminated membrane Separated from adventitia by line of cleavage (ECTOCYST)
 - 3) Germinal layer (ENDOCYST)..(Scolices, broad Capsule, Daughter cysts)
 - 4) Hydatid fluid ... HIGHLY ALLERGIC

CLINICAL PICTURE:

- ☑ Type of patient ... شيبوب
- ☑ C/O → Most common is Asymptomatic
→ Chronic pain, swelling in Hypochondrium
- ☑ O/E : Swelling, Hydatid thrill



COMPLICATIONS:

- ☑ Rupture
 - Biliary tree → Obstructive jaundice
 - Peritoneum → Anaphylactic shock
 - Hepatic veins → Systemic affection
- ☑ Malignant Hydatid ... WITH E. MULTILOCULARIS
- ☑ Calcification

INVESTIGATIONS

- ☑ DIAGNOSIS
 - Serology (Complement fixation, hemagglutination , Casoni-intradermal test, Immunophoresis)
 - U/S ... Site, size, Number
- ☑ COMPLICATIONS → ERCP (Obstructive Jaundice)

TREATMENT ساندويتش

- ☑ Pre-operative (MEDICAL) → Mebendazole 400mg x3/day for 1 month
- ☑ Sterilization of cyst by partial evacuation or injection of Colloid material
- ☑ OPERATIVE → Enucleation of cyst + Omentoplasty
- ☑ POST-OPERATIVE → Albendazole 400-600mg x3/day for 1 month.
- ☑ TTT. Of complications

ORGANISM :

- ☑ Entamoeba histolytica

PATHOLOGY:

- ☑ SITE... Right lobe, Postero-sup. segment
- ☑ NUMBER Solitary
- ☑ Amoebic hepatitis → Amoebic Abscess:
 - Not a true abscess
 - Amoeba exists in wall
 - Contains ANCHOVY SAUCE

CLINICAL PICTURE:

.. Like acute cholecystitis ..

- ☑ Type of patient ... YOUNG MALE
- ☑ C.P. : MAJOR PAIN + MINIMUM FEVER
- ☑ Attack of desentery MAY NOT be obtained

FATE:

- ☑ **RESOLUTION IS THE ROLE**
- ☑ Chronicity
- ☑ COMPLICATIONS: **RUPTURE** (Peritoneum, pleura, pericardium, points to skin)

INVESTIGATIONS

- ☑ U/S, CT scan → No, site, size
- ☑ Metronidazole test
- ☑ Isolation from Liver, stool
- ☑ Stool analysis
- ☑ Plain x-ray → elevation of Rt. Cupula of diaphragm, Rt. Sided pleural effusion

TREATMENT

- ☑ MEDICAL → Metronidazole 800mg x3/day for 10 days
- ☑ SURGICAL:
 - 1) Aspiration U/S guided
Undercover of metronidazole
 - 2) Open drainage

PYOGENIC LIVER ABSCESS

2nd MOST COMMON SOLID
ABDOMINAL ORGAN TO BE
INJURED (SPLEEN IS THE 1ST)

ETIOLOGY:

☑ PREDISPOSING FACTORS

Old age, DM, Immuno-compromized, Pre-existing liver lesions

☑ SITE

- RIGHT LOBE > left lobe
- IF MULTIPLE ABSCESES → Phlebitis, suppurative cholangitis, Septicemia

☑ ORGANISM:

G-ve aerobic rods, Streptococci, Anaerobes

☑ MAIN ROUTES:

- 1) PORTAL VEIN → portal pyemia, Neonatal umbilical sepsis
- 2) HEPATIC ARTERIES → Septicemia, Systemic pyemia
- 3) BILE DUCT → **ASCENDING CHOLANGITIS** (MOST COMMON)
- 4) DIRECT EXTENSION → Sub-phrenic abscess, Empyema thoracis,
Penetrating wound, suppurative cholecystitis
- 5) 2^{ry} INFECTION → of Hydatid cyst, Amoebic liver abscess, Tumor

Clinical Picture

- ☑ CP of CAUSE + CP of ACUTE CHOLECYSTITIS ...(fever, malaise, RT upper quadrant pain)

COMPLICATIONS:

- ☑ Direct extension to surrounding
- ☑ Rupture

INVESTIGATIONS:

- ☑ CBC → Anemia, ↑TLC, ↑ESR
- ☑ LFT → Trans-aminases, ALK. Phosphatase, Serum bilirubin, Serum Albumin
- ☑ U/S, CT → Number, site, size of abscesses
- ☑ U/S Guided aspiration + C&S

TREATMENT:

- ⊖ If multiple small abscesses → Broad spectrum Antibiotics
- ⊖ If Large >4 cm
 - 1) U/S guided percutaneous aspiration + insertion of Tube drain
 - 2) Open surgical drainage.
- ⊖ Treatment of cause

PROGNOSIS

- ☑ Mortality 18-20 %

BENIGN LIVER TUMORS

ADENOMA

Patient → Female in Menstrual age, on OCPs.

PATHOLOGY:

- Macroscopic → Multiple soft well circumscribed, yellow, fleshy tumors
- Microscopic → Sheets of mature hepatocytes, Mimic nodular hyperplasia of cirrhosis

C/P → Pain, swelling in the right hypochondrium

COMPLICATIONS: May turn malignant (rare)

INVESTIGATIONS:

- CT "TRIPHASIC"
- Abdominal U/S, Angiography
- BIOPSY → Confirmatory

TREATMENT:

- If <2cm → Spontaneous regression occurs after stopping OCPs
- If large → Localized resection



HEMANGIOMA

MOST COMMON BENIGN TUMOR OF LIVER

LIVER IS THE MOST COMMONLY AFFECTED ORGAN

PATHOLOGY Cavernous

CP → Asymptomatic

INVESTIGATIONS:

- U/S → HYPER-ECHOIC
- Angiography, CT with contrast

TTT:

- Small, asymptomatic → Follow up
- If complicated → Excision

FOCAL NODULAR HYPERPLASIA

:: NOT A TRUE NEOPLASM ::

ETIOLOGY Unknown but may be due to "OCPs"

PATHOLOGY → Pathognomonic "**STELLATE SCARS**"

INVESTIGATIONS:

- **SULPHUR COLLOID SCAN** → diagnostic to differentiate between benign adenoma or Iry metastatic cancer
- CT SCAN → detects stellate scars

TTT:

- Stop OCPs
- If malignancy is suspected → Exploration, & Frozen section is taken

HEPATOCELLULAR CARCINOMA

"HEPATOMA"



PDF :

- ☒ Hepatitis (B > C)
- ☒ Liver cirrhosis **ALL CAUSES EXCEPT WILSON'S DISEASE...**
- ☒ Aflatoxins
- ☒ Biliary atresia, Alpha 1 anti-trypsin deficiency
- ☒ Adenoma (rare)

PATHOLOGY:

- ☒ MACRO → Mass with infiltrating edge + areas of Hemorrhage, necrosis
- ☒ MICRO → Adeno-carcinoma, High vascularity (Hepatic artery)

SPREAD:

- ☒ DIRECT: Stomach, Colon ...
- ☒ LYMPH: Porta hepatis → Coeliac → Thoracic duct → Left supraclavicular
- ☒ BLOOD: BLBL

CLINICAL PICTURE:

- ☒ TYPE OF PATIENT :

Patient with liver cirrhosis → RAPID DETERIORATION

(Jaundice, hepatic encephalopathy, Hematemesis, Ascitis)

- ☒ GENERAL SIGNS : Cachexia, Jaundice, Enlarged supraclavicular LNs

- ☒ LOCAL SIGNS :

- INSPECTION → Enlarged
- PALPATION → Irregularity, tenderness, Localized mass
- PERCUSSION → Ascitis
- AUSCULTATION → MAAMOUN SIGN.. (Murmur) ...
- OCCULT PRESENTATION → "PARAMALIGNANT \$".. Polycythemia, FUO, Hypoglycemia

INVESTIGATIONS:

- ☒ DIAGNOSIS

- U/S , CT scan

- TUMOR MARKERS → **CARBOXY PROTHROMBIN** (More specific), Alpha feto protein

- HEPATIC ANGIOGRAPHY ... Through Hepatic artery → Show Characteristic ↑ vascularity ...

- ☒ STAGING → Chest x-ray, CT Scan

- ☒ FOLLOW UP → Carboxy prothrombin, Alpha feto protein (N: 0-10 ng/dl) 500ng/dl

- ☒ PRE OPERATIVE → CBC, LFT, KFT, FBS

FIBROLAMELLAR TYPE

- ☒ Variety of massive form
- ☒ Affects NON-CIRRHOTIC young females
- ☒ BETTER Prognosis
- ☒ MICROSCOPICALLY: Multiple fibrous septa (resembles FNH)
- ☒ -ve Alpha Feto-protein (MARKER IS CARBOXYPROTHROMBIN)
- ☒ +ve PARAMALIGNANT \$

TREATMENT

OPERABLE

HEALTHY

Liver

resection

CIRRHOTIC

Liver

transplantation

IN-OPERABLE

- CHEMOTHERAPY
- MONOCLONAL Antibodies
- Cryo-surgery
- Thermo-ablation
- Percutaneous Ethanol injection

LIVER METASTASIS

MOST COMMON MALIGNANT TUMOR IN EGYPT

ETIOLOGY:

PRIMARY SITES	REACH THE LIVER VIA ...
- Stomach, Breast, kidney - Colo-rectal , lung - Pancreas, ovary - Melanoma 2ry Carcinoid tumor from Small intestine, Bronchus	- Portal vein.. MOST COMMON... - Hepatic artery - Lymphatics (BREAST) - Direct extension

PATHOLOGY:

- Multiple, **UMBILICATED NODULES** (central necrosis)
- Adenocarcinomas
- 90% of cases → Have Tumor deposits in other organs

CLINICAL PICTURE:

- CP of lry tumor + Hepatomegaly, ascites, Jaundice

INVESTIGATIONS:

- CBC: Anemia
- LFTs: ↑ALK. Phosphatase, ↑ Serum Bilirubin
- TUMOR MARKERS**
- U/S, CT, MRI, PET-scan → **"DIAGNOSTIC"** ... Number, site, size of metastasis

TREATMENT:

ONCE LIVER METASTASIS OCCURS → TUMOR IS INOPERABLE

...Except COLO-RECTAL TUMOR (MAX. 3 METASTASIS AT THE SAME SITE)...

- NON-resectable tumors**
 - 1) Chemotherapy
 - 2) Monoclonal antibodies
 - 3) Sectorial portal vein Embolization
- Resectable tumors** ... Colo-rectal tumors ... survival rate 35%
 - May be up to 60-70% resection if metastasis occurs on top of healthy liver.

PRE-REQUISITES OF RESECTION:

- Completely resectable Primary tumor
- Solitary liver metastasis ,
- <4 but Confined to ONE lobe
- Liver is the only affected organ with metastasis



PORTAL HYPERTENSION

TOPICS DISCUSSED IN THIS CHAPTER:

- Pathology & Clinical picture of Portal hypertension
- Management of esophageal bleeding

PORTAL HYPERTENSION

PREHEPATIC

- Portal Vein thrombosis
- Compression with a cyst
- A-V malformations

N.B.

- Normal Pressure= 7mmHg (8-12 cm H₂O)
- Portal HTN= >20mmHg (25-30 cm H₂O)

INTRAHEPATIC

PRE-SINUSOIDAL

- Bilharzial Periportal fibrosis
- Congenital Fibrosis
- Infiltration of portal tract by abnormal cells (LYMPHOMA)

SINUSOIDAL

- Liver Cirrhosis

POST-SINUSOIDAL

- Veno-occlusive disease

SUPRAHEPATIC

- BUDD CHIARI \$
- IVC obstruction
- Right ventricular failure
- Constrictive Pericarditis
- Tricuspid Incompetence

BUDD CHIARI \$

- Triad of :
ABDOMINAL PAIN + ASCITIS
+ HEPATOMEGALLY
- CAUDATE lobe is spared
- TTT: transplantation

PATHOLOGY OF PORTAL HYPERTENSION:

▪ PORTOSYSTEMIC ANASTOMOSIS

- 1) Between lower end of esophagus & fundus of stomach
- 2) Around umbilicus "CAPUT MEDUSA"
- 3) Between Lower end of rectum & Anal canal "ANO-RECTAL VARICES"

▪ SPLENOMEGALY

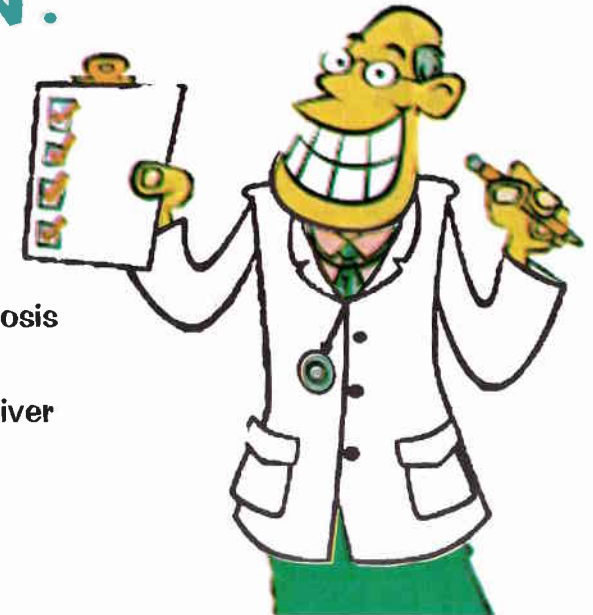
Congestive, due to RES hyperplasia, Hypersplenism or Splenic vein Thrombosis

▪ ASCITIS

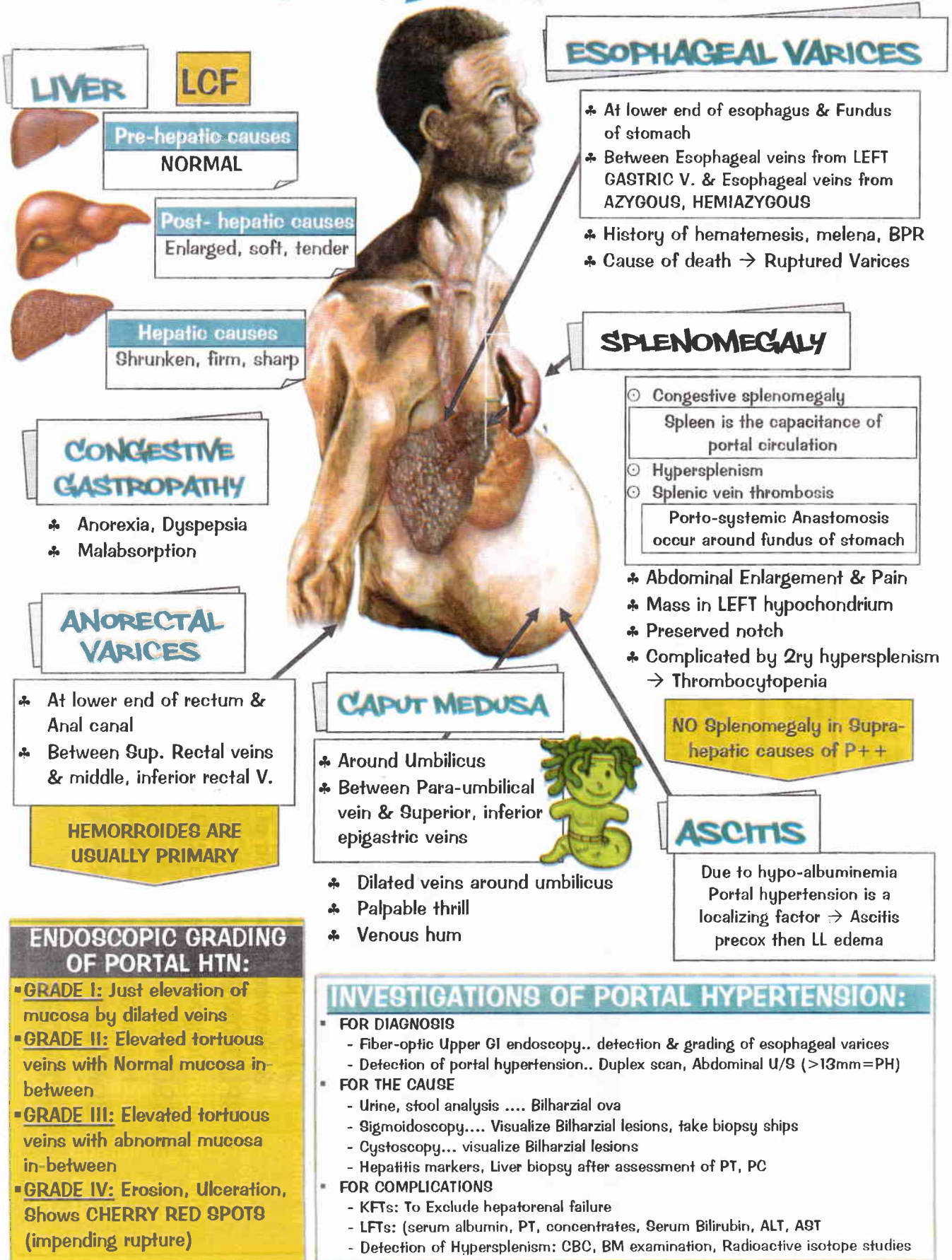
Hypoalbuminemia + Portal hypertension + Na, H₂O retention + Wheeping liver

▪ CONGESTIVE GASTROPATHY

▪ LIVER CELL FAILURE



CLINICAL PICTURE OF PORTAL HYPERTENSION



MANAGEMENT OF ESOPHAGEAL BLEEDING

CLINICAL PICTURE:

Variable degree of Shock, Hematemesis, Melena, Picture of Cause (Bilharziasis, Cirrhosis)

INVESTIGATIONS: UPPER GI Endoscopy

TREATMENT:

- 1) Of Shock, of Encephalopathy, of Hematemesis
- 2) If Medical treatment failed ... SURGERY...
- 3) TREATMENT IN BETWEEN ATTACKS
- 4) TREATMENT OF PAST HISTORY OF HEMATEMESIS
- 5) TREATMENT OF SPLENOMEGALY ON TOP OF PORTAL HYPERTENSION

TREATMENT OF ACTIVE BLEEDING ESOPHAGEAL VARICES

SHOCK

عادي + كلمتين مهمين :

- ⊙ Hemostatics, Fresh blood , plasma
- ⊙ IV Vitamin K
- ⊙ NO Morphine

ENCEPHALOPATHY

⊙ نشد الدم من فوق

Ryle → Gastric lavage

⊙ نشد الدم من تحت

Enema / 2 hours

⊙ بواقى دم على أعضاء

⊙ Enteral Antibiotics

(Neomycin 1gm/6 hours or Metronidazole 250 mg/day)

⊙ Oral Lactulose 10-30 ml/day

⊙ Ammonia فى المخ

Arginine - sorbitol, Flumazenil

HEMATEMESIS

PRESSURE

Vasopressin
(Glypressin
is better)

THIN
WALL

BLEEDING
TENDENCY

Blood
Transfusion

✦ Injection Sclerotherapy

✦ Balloon tamponade

(SUNGSTAKEN-BLAKMORE
tube, MINNESOTA tube)

Until Injection is ready or if
there's residual bleeding

IF MEDICAL TREATMENT FAILED → SURGICAL TTT.

- DEVASCULARIZATION: Hassab operation
- RECENT TRENDS: Percutaneous Trans-hepatic obliteration of varices, Trans-jugular intra-hepatic porto-systemic shunt " TIPSS"

PH WITH NO PAST HISTORY OF BLEEDING

- ⊙ Liver support
- ⊙ بروتين و عسل نحل
- ⊙ Selemarin
- ⊙ TTT. of the cause

INBETWEEN ATTACKS ..

بروتين و فيتامين و عسل نحل و نعالج السبب

- ⊙ Concentrated glucose 20%
- ⊙ Vitamin K
- ⊙ Protein restriction
- ⊙ Liver support
- ⊙ Propranolol
- ⊙ Injection sclerotherapy

RUPTURE SPLEEN ON TOP OF HYPERSPLENISM

⊙ Splenectomy & De-vascularization

SPLEEN SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Rupture of spleen
- Splenomegaly
- Hypersplenism
- Miscellaneous topics

RUPTURE OF SPLEEN

Spleen is the most common organ to be injured in an abdominal trauma

ETIOLOGY

- ☑ **CLOSED TRAUMA:** Direct, Indirect, Spontaneous
- ☑ **OPEN TRAUMA:** Gun-shots, Puncture, Iatrogenic (Gastrectomy)

PATHOLOGY

Subcapsular hematoma, superficial tears, Deep Tears, Avulsion of pole of spleen, Complete depulping of spleen, Injury of a vascular pedicle

TYPES OF RUPTURE SPLEEN:

- ☑ Fatal
- ☑ Delayed (minor trauma pass un-noticed... subcapsular hematoma... Rupture after weeks)
- ☑ Classic type

CLASSIC PRESENTATION OF RUPTURE SPLEEN

(Shock → Lucid interval → Internal Hemorrhage)

STAGE OF SHOCK

- **GENERAL signs:** Tachycardia, Hypotension, Hypothermia, ↓ Urine output
- **LOCAL:**
 - ☐ Inspection ... Ecchymosis, Bruises, Fracture of ribs, Abdominal distention
 - ☐ Palpation ... Rigidity, Tenderness, Rebound tenderness
 - ☐ Percussion ... Shifting dullness
 - ☐ Auscultation ... ↓ Intestinal sounds
 - ☐ DRE ... Fullness in Retrovesical pouch, Douglas pouch

SPECIAL SIGNS

- ✓ **KEHR'S SIGN** Referred pain in Lt shoulder , hypersthesia from diaphragmatic irritation
- ✓ **BALANCE SIGN** Shifting dullness on Right side (free blood) + Fixed Dullness on Left side (Clots, hematoma)
- ✓ **CULLEN SIGN** (late)

INVESTIGATIONS:

- ⊕ **US & CT SCAN** (better than peritoneal lavage) → show hematoma, free peritoneal bleeding..
U/S, CT replaced "DIAGNOSTIC PERITONEAL LAVAGE" (used when there's no time)
- ⊕ Arteriography (diagnostic & therapeutic)
- ⊕ Plain x-ray → Elevated left cupola of diaphragm + indentation of Fundic air bubble
+ Obliteration of Lt psoas shadow
- ⊕ **LABORATORY** → CBC, KFTs, FBS, Electrolytes

TREATMENT

POLYTRAUMATIZED PATIENT → RESUSCITATION & MONITORING

- ☑ In adults → urgent laparotomy & Splenectomy
- ☑ In children:
 - 1) Splenic preservation... (Total or Partial splenectomy, Splenic A. ligation, Embolization)
 - 2) Vaccination (pneumococcal), Post-op penicillin

RECENTLY: SPLENIC CONSERVATION IS BETTER EVEN IN ADULT TO ↓ RISK OF INFECTION

SPLENOMEGALY

INFECTIVE

- **BACTERIA:** Typhoid, Paratyphoid, TB, Pyogenic, Abscess
- **VIRUS:** IMN
- **SPIROCHETES:** \$
- **PARASITES:** Bilharziasis, Hydatid cyst, Malaria, Kala azar

BLOOD DISEASE

- Leukemia
- Anemia
- Polycythemia
- ITP
- Hemolytic anemia

NEOPLASTIC

MOST COMMON IS LYMPHOMA

- Hemangioma
- Fibro-sarcoma

CONGESTIVE

Portal Hypertension

METABOLIC

- Gaucher's disease
- Amyloidosis
- Rickets

NON-PARASITIC & COLLAGEN

- Felty's disease
- Still's disease

N.B.

HUGE SPLENOMEGALLY

(Enlargement of spleen Crossing Umbilicus)

- Myeloid leukemia, Chronic leukemia
- Thalassemia Major
- Amyloidosis

HYPERSPLENISM

PRIMARY HYPERSPLENISM

- **ETIOLOGY:** Idiopathic
- **CLINICAL PICTURE:**
 - 1) ↓WBCs ... Fever, Frequent infection, Oral Ulcers
 - 2) ↓Platelets ... Petichae, Ecchymosis
 - 3) ↓RBCs ... Pallor
- **INVESTIGATIONS:**
 - CBC → Pancytopenia, ↑Reticulocytosis
 - BM → Hyperplasia
- **TREATMENT:** Splenectomy

SECONDARY HYPERSPLENISM

- **ETIOLOGY:** Secondary to portal hypertension
- **TREATMENT:** Splenectomy + Vasoligation

MISCELLANEOUS TOPICS

MOST COMMON CAUSE OF NEOPLASTIC ENLARGEMENT OF SPLEEN IS LYMPHOMA

HEREDITARY SPHEROCYTOSIS

- ✓ AUTOSOMAL DOMINANT
- ✓ Increases RBC permeability to Na, H₂O

CLINICAL PICTURE

- ✓ Young adult with **ANEMIA & GB STONES**
- ✓ **+VE OSMOTIC FRAGILITY TEST**
(Hemolysis occur at 0.6% N. Saline)

- ✓ **RETICULOCYTOSIS**

TREATMENT

Splenectomy & transfusion

IDIOPATHIC THROMBOCYTOPENIC PURPURA (ITP)

- ✓ Cause splenomegaly in 25 % of cases

Treatment:

- ✓ **ACUTE:** Platelet transfusion + Prednisolone + IgG
- ✓ **CHRONIC:** Conservative
- ✓ **IF FAILED:** Splenectomy

ANEMIA IMPROVED BY SPLENECTOMY

- ✓ Spherocytosis, Elliptocytosis
- ✓ Thalassemia
- ✓ Hypersplenism associated anemia
- ✓ Pyruvate Kinase deficiency
- ✓ Acquired autoimmune Hemolytic anemia

SPLENOMEGALY + LYMPHADENOPATHY

Hodgkin disease, Acute leukemia, Felty's

ELECTIVE SPLENECTOMY:

- ✓ Hypersplenism
- ✓ Staging of Hodgkin
- ✓ Treat Splenic cyst, Tumors, Abscess
- ✓ All Hemolytic anemias except "Sickle cell anemia"

THROMBOCYTOPENIA

ETIOLOGY:

- ✓ Anaplastic anemia
- ✓ DIC
- ✓ Hypersplenism

NB: Post-splenectomy ISN'T a cause



LIVER

- ALT is not included in child's classification of liver failure
- The Distal spleno renal shunt {Warren shunt} is a selective shunt that preserves good hepatic portal perfusion and associated with lowest risk of hepatic encephalopathy
- Common problems occurring with use of balloon tamponade for control of variceal bleeding are Pneumonia, Aspiration of nasopharyngeal secretion, Re-bleeding following removal of the tube and Esophageal ulceration or perforation NOT GASTRITIS
- Radio-nucleotide scanning can be useful in diagnosis of FNH
- Regarding HCC TTT:
 - Liver resection for 1 lesion, child A/B.
 - Liver transplantation in child C with 1 HCC ≤ 5 cm.
 - Ablation in single HCC < 2 cm, child B & 2 – 3 tumors ≤ 3 cm.
- Traditional chemotherapy is generally ineffective, causes many side effects that may severely impair quality of life.
- Mechanism of action of ethanol when used in ablation of liver tumors is:
 - Coagulation necrosis of tissues.
 - Thrombosis of B.V.
 - $\downarrow$ Platelet count.
 - For Budd Chiari $\$,$ liver transplantation is an effective treatment.
- Intrahepatic biliary lakes with stone characterize CAROLI'S DISEASE
- IN TTT of HCC radiofrequency is successful in tumor < 5 cm
- About TACE {trans arterial chemoembolization}:
 - Very effective in TTT of HCC, cholangiocarcinomas, Metastatic colorectal tumor
 - Cannot be used safely given in patients with compromised liver function
 - Patency of portal vein should be evaluated carefully before it
 - Liver function has to be taken into account while instituting TACE
- Close proximity of HCC to bile duct or portal vein is a contra-indication for Radiofrequency Ablation as TTT
- The most feared complication of Denver shunt is DIC
- Von Willebrand factor is synthesized by endothelial cells not by Liver
- Factor 7 has the shortest half-life ,5-7 hours so measurement of factor 7 level are useful for determining liver failure



SPLEEN

- Head of pancreas is not common site of accessory spleen while the common sites are splenic hilum ,Tail of pancreas and transverse mesocolon
- Most common site for splenunculi is the Hilum of the spleen
- During the acute attack of ITP Steroids, IG, Platelet concentrate are TTT options while splenectomy is not a mode of TTT
- IN ITP Platelet counts rise to adequate level is in 60% to 80% of patients who undergo splenectomy
- The following 5 causes of hemolytic anemia are amenable to splenectomy:
 - Hereditary spherocytosis
 - Thalassemia
 - Acquired autoimmune hemolytic anemia
 - Pyruvate kinase deficiency.
 - Hereditary elliptocytosis.
- The MOST COMMON CAUSE of neoplastic enlargement of spleen is LYMPHOMA



1. Patient lives in endemic area presents with picture similar to acute cholecystitis but with major pain and minimal fever.

Amoebic liver abscess.

2. Patient presents with picture similar to acute cholecystitis but major fever, malaise and right upper quadrant pain.

Pyogenic liver abscess.

3. Patient with history of liver cirrhosis presents with rapid deterioration of health and exaggeration of pre-existing hepatic condition with elevation of alpha feto-protein more than 500 ng\dl.

HCC (hepatoma)

4. Patient with history of liver disease and previous injection sclerotherapy presents with massive hematemesis and shock.

Rupture esophageal varices.

5. Patient with history of trauma to upper abdomen or lower chest followed by abdominal pain and referred pain to the left shoulder.

Rupture spleen.



SURGI-TOONS

GALL BLADDER & PANCREAS



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GALL BLADDER SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Gall bladder stones
- Management of Cholecystitis
- Management of Obstructive Jaundice

Female, fatty, forty, fertile, filthy, flatulent



طلبت من جوزها يفسحها... وداها فرح
قامت ضربت دستتين جاتوه وقالت له :رقصني ..أو ما رقصوا قامت
بطنها قفشت من الوجع (Biliary colic)

صعبت عليه وإداها
Antispasmodics

القفشة هتفك و تتحول ل..
Chronic cholecystitis



سابها ورقص مع واحدة جامدة
لمدة 12 ساعة

سيخت و بقت..
Acute cholecystitis

من بعد الفرغ ..أكلها إغير و بقي ني X ني ...
جوزها سألها ليه أكلك إغير كدة ??..
قالت له : "ده أكل صحي علشان المسبك بيعمل إنتفاخ و كركرة (Biliary dyspepsia)



في يوم من الأيام ..
يمكن الحصوة تنط في ال CBD فتعمل Obstructive jaundice
زيتونة خضراء و بهرش و بتنزل عسل إسود برغاوى و طحينة

في يوم من الأيام ..
يمكن تسخن و تتحول Ascending cholangitis
Charcot's triad

في يوم من الأيام ..
يمكن ضغطها يوطى و يغمى عليها..
Reynold's pentad



طقم ال Biliary colic

- ♣ Sudden Severe Colic in Right Hypochondrium radiating to right shoulder & Back
- ♣ Precipitated by Fatty meals & Relieved by Antispasmodics
- ♣ May be accompanied by :
 - Nausea & Vomiting
 - Reflex symptoms (Reflex retrosternal pain)

GALL BLADDER STONES

INCIDENCE

- ✓ 20% of females > 40 years
- ✓ Females:Males = 3:1

GALL STONES FORMATION

ETIOLOGY:

✓ Metabolic :

- ↓ Bile salts/ Cholesterol
- ↑ Dietary fat, Crohn's disease (interrupted entero-hepatic circulation), ↓ Hepatic synthesis (Liver cirrhosis)
- ↑ Bile pigments.. (Hemolytic anemia)
- ✓ Infections: E.Coli, Typhoid.. form Nidus & Change PH
- ✓ Bile stasis

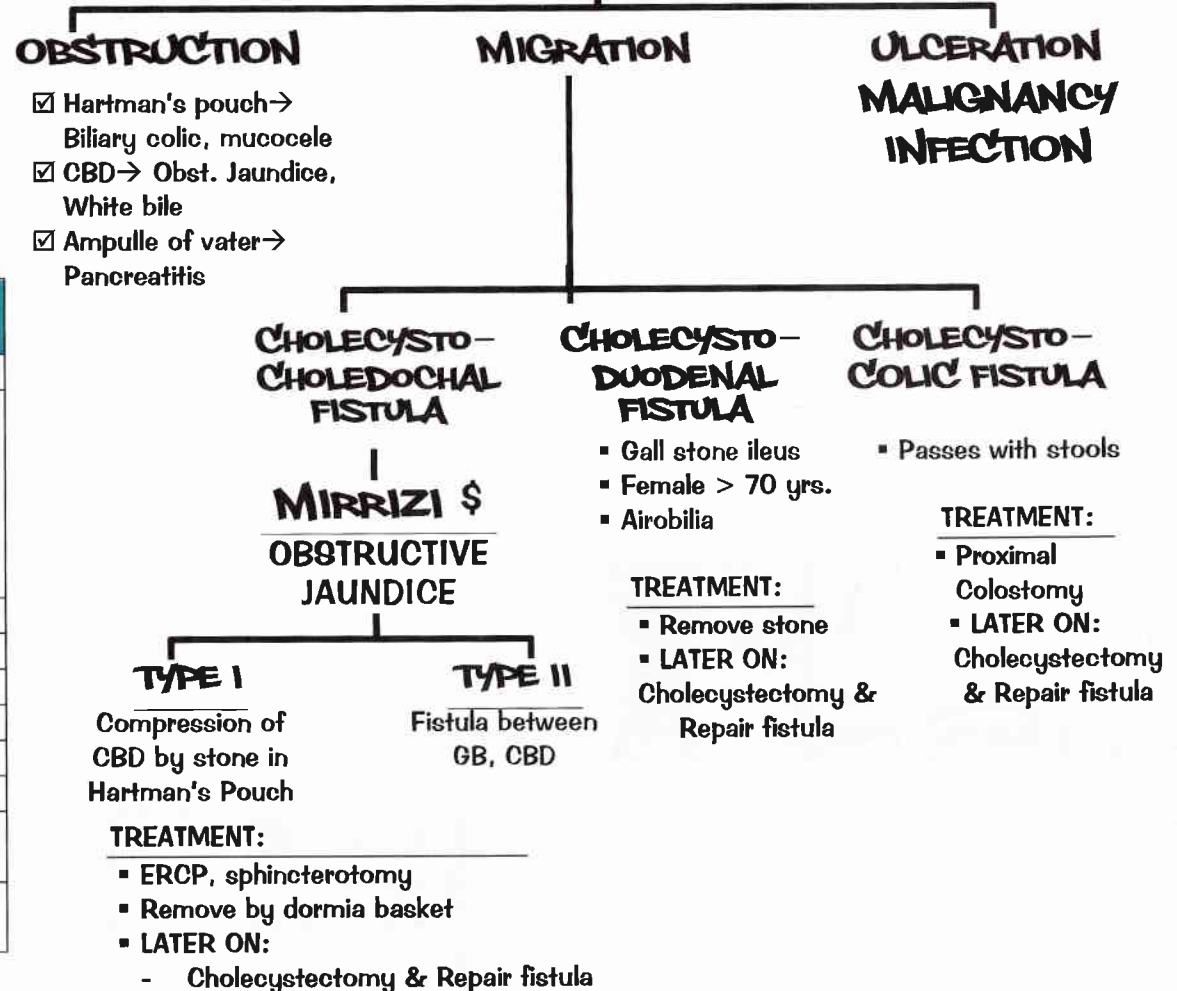
TYPES:

- ✓ NORMAL BILE SALT/CHOLESTEROL RATIO 25/1
- ✓ IF IT ↓ TO 13/1 ... PRECIPITATION OCCURS

	CHOLESTEROL	BILE PIGMENT	MIXED
Incidence	8%		80 %
components	cholesterol	bilirubin & Ca	Cholesterol + CaCO ₃ , Calcium bilirubinate, bile salts, bile pigments
Size	Large	small	0.5- 2.5 cm
Shape	Rounded	Irregular	Faceted
Surface	Mamillated	Smooth	
Number	Single, multiple	Multiple	
Color	Yellow	Dark green	Yellowish
Consistency	Hard (Floats)	Soft	Hard (sinks)
Cut section	NO Nucleus + NOT laminated	HOMOGENOUS	NUCLEUS + laminated
X-ray	RADIOLUCENT		RADIO-OPAQUE

COMPLICATIONS

OMUMI



GALL BLADDER STONES

INVESTIGATIONS

✓ FOR DIAGNOSIS:

- ABDOMINAL U/S (of choice)
(Detects size, thickness of GB, presence of stones, diameter of CBD, intrahepatic biliary dilatation)
- Plain X-ray .. 10-15% of cases

✓ FOR COMPLICATIONS:

- LFTs.. NORMAL
(if ↑ Bilirubin, Alkaline Phosphatase → Stone in CBD)
- KFTs.. BUN, Creatinine



TREATMENT

ASYMPTOMATIC GB STONES

✓ WAIT & WATCH

✓ Except:

- Diabetic patient
- Congenital hemolytic anemia
- Patient undergoing Bariatric surgery
- Young fit patient
- **PORCELAIN GALL BLADDER**

SYMPTOMATIC GB STONES

CHOLECYSTECTOMY

TTT OF COMPLICATIONS

✓ ACUTE CHOLECYSTITIS

- Patient with mass → Conservative TTT then Cholecystectomy
- Patient without mass → URGENT Cholecystectomy

✓ ACUTE PANCREATITIS

- Conservative TTT

✓ OBSTRUCTIVE JAUNDICE

- ERCP & Sphincterotomy
Remove with Dormia Basket
- IF SUCCEEDED:

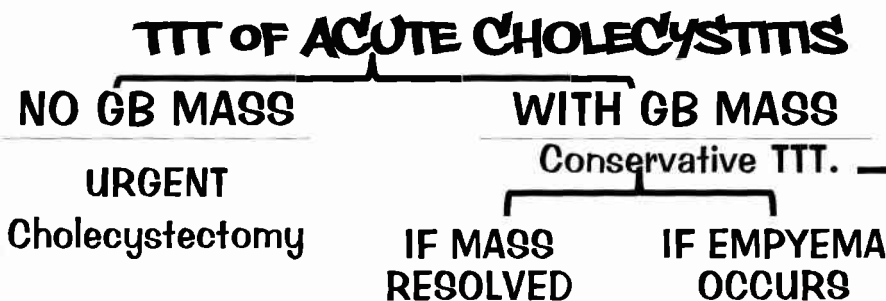
Laparoscopic cholecystectomy

✓ GB ILEUS

- Resuscitation, monitoring
- Deal with the stone
(Crushing of stone, Milking to pass iliocaecal valve, Removal by enterostomy, Resection & Anastomosis)

MANAGEMENT OF CHOLECYSTITIS

	ACUTE CALCULAR	CHRONIC CALCULAR
PATIENT	GF female, forty, fatty, filthy, flatulent, fertile	
SYMPTOMS	BILIARY COLIC - Sudden, severe - Colicky pain - Right upper quadrant - Referred to Rt. Shoulder ↑ by fatty meals ↓ by antispasmodics	FAT DYSPEPSIA + Recurrent attacks of biliary colic + Reflex symptoms
GENERAL SIGNS	☒ High Fever, Tachycardia	
LOCAL SIGNS	Acute abdomen max. at Rt hypochondrium : ☒ <u>Inspection</u> → rigidity ☒ <u>Palpation</u> → guarding, tenderness, rebound tenderness ☒ <u>Percussion</u> → -VE ☒ <u>Auscultation</u> → decreased Intestinal sound ☒ <u>DRE</u> → -VE	+VE Murphy's sign ☒ SAINT'S TRIAD Chronic calcular Cholecystitis, Hiatus hernia, Diverticular disease ☒ WILKIE'S TRIAD Chronic cholecystitis, Chronic PU, Chronic appendicitis
SPECIAL SIGNS	♣ BOAS' SIGN (Hyperesthesia between 9 th , 11 th rib) ♣ GB MASS (difficult to palpate)	Signs of Saint's triad (CC, HH, DD) or Wilkie's triad (CC, PU, App.)
COMPLICATIONS	GENERAL → Toxemia, septicemia, pyemia	
LOCALLY :	☒ Empyema, Mucocoele ☒ Chronicity ☒ Spread of infection (Cholangitis, Cholangio-hepatitis, Pancreatitis) ☒ Perforation → Peritonitis, fistula ☒ Jaundice (Cholangitis, Mirrizi \$, stone) ☒ Emphysematous cholecystitis (Clostridia welchii, old diabetic pt., x-ray → gas inside lumen)	☒ Acute exacerbation on top of chronic ☒ Stones ☒ Cardiac link ☒ Porcelain GB & cancer GB
INVESTIGATIONS	☒ <u>U/S</u>.. Hyper-echoic stone, Hypo-echoic GB ☒ <u>Plain x-ray</u>.... Radiopaque stones, gases ☒ <u>HIDA scan</u> ... visualization of CBD, not GB ☒ <u>Exclude IHD, pancreatitis</u>: ECG, Serum Amylase	☒ U/S....shrunken, fibrotic GB ☒ Dynamic U/S → Detect Function ☒ Plain x-ray... Radiopaque stones ☒ For complications → LFT, ERCP ☒ Exclude saint's triad → endoscopy, Barium meal
TREATMENT	☒ See later	Cholecystectomy.



- ☒ Semitting position
- ☒ Stop oral feeding → Ryle
- ☒ Antispasmodics
- ☒ Sedatives : pethidine
- ☒ Antibiotics : Quinolones ... # Cephalosporines
- ☒ Monitoring for vital data

+ TTT. OF COMPLICATIONS ...

MANAGEMENT OF OBSTRUCTIVE JAUNDICE

	CALCULAR	MALIGNANT
Type of patient	6F	old Male
Symptoms :	☒ Jaundice ... SUDDEN ONSET , intermittent ☒ Biliary colic: ▪ Rt. hypochondrium radiating to shoulder, back ▪ ↑ with fatty meals, ↓ with anti-spasmodics	☒ Jaundice ... Gradual onset, Progressive course EXCEPT IN PERIAMPULLARY CARCINOMA (1 or 2 remissions occur) ☒ Pain is LATE
GENERAL SIGNS :		 + Supra-clavicular LNs enlargement
LOCAL SIGNS :	Shrunken enlarged, not tender Not felt	distended, Tender enlarged , tender (metastasis) Enlarged + Ascitis , DRE for Krukenberg Tumor
INVESTIGATIONS:		
1) LFT	↑ direct bilirubin No rise unless cholangio-hepatitis occur ↑ gamma-GT, 5-Nucleotidase Prolonged PT	
2) Urine	Dark colored, frothy	
3) Stool	↑ direct bilirubin > 10 mg%	NO URO-bilinogen
4) BUN, CBC	Clay colored, bulky offensive + NO sterco-bilinogen	
5) Abdominal U/S	↑BUN, ↑ TLC	
6) ERCP, PTC	Dilated intra-hepatic biliary radicals + Dilated CBD	
7) Special inv.	Diagnostic and therapeutic.. Showing stone, malignancy..etc	
	☒ Intra-operative Cholelithotomy ☒ Intra-operative cholangiography ☒ Post-operative T-tube cholangiography	☒ Barium meal → widening of C-curve (In peri-ampullary carcinoma → inverted 3 shape) ☒ For staging → CT scan ... mass in pancreas, metastasis ☒ Follow up → Tumor markers (CEA, POFA, PCAA) ☒ Pre-operative → CBC, KFT, ABG
Treatment :	See later	See later

TTT. OF CALCULAR OBSTRUCTIVE JAUNDICE

PREOPERATIVE PREPARATIONS

Correct clotting dysfunction

- ✓ Vitamin K IV
- ✓ Fresh Blood transfusion

Guard against LCF

- ✓ ↑ Glucose intake
- ✓ Broad spectrum Antibiotics

Guard against Renal failure

- ✓ Hydration
- ✓ IV mannitol
- ✓ Oral bile salts

DEFINITIVE TREATMENT

IF TECHNIQUE IS AVAILABLE

- ✓ ERCP sphincterotomy
Removal of stone by
Dormia Basket
- ✓ Cholecystectomy

IF TECHNIQUE IS NOT AVAILABLE OR FAILED EXTRACTION OF STONE

- ✓ Cholecystectomy
- ✓ Cholydocholithotomy
- ✓ Intra-Operative Choledoscopy

بصة فوق و بصة تحت

- ✓ Insertion of T-tube for 10 days then Intra-operative Cholangiography

SPECIAL PROCEDURES:

- ✓ If Impacted stone, stricture, Inaccessibility:
Choledocho-duodenostomy
(Better → Jejunostomy – Roux en Y)

✓ MISSED STONE:

- 1) ERCP, Sphincterotomy, Extraction of stone by dormia basket
- 2) T-Tube for 1 MONTH, Choledoscopy
- 3) Dissolution Therapy : Saline + Heparin + Chenodeoxycholic acid + Zylocaine

MALIGNANT OBSTRUCTIVE JAUNDICE

PREOPERATIVE PREPARATIONS

Correct clotting dysfunction

- ✓ Vitamin K IV
- ✓ Blood transfusion

Guard against LCF

- ✓ ↑ Glucose intake
- ✓ Broad spectrum Antibiotics

Guard against Renal failure

- ✓ Hydration
- ✓ IV mannitol
- ✓ Oral bile salts

DEFINITIVE TREATMENT

UNFIT FOR SURGERY

Endoscopic
stenting

FIT FOR SURGERY

OPERABLE

Whipple
operation

IN-OPERABLE

Stent & Triple anastomosis

- 1) Gastro-jejunostomy
- 2) Cholecysto-jejunostomy
- 3) Jejunostomy

PANCREAS SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Pancreatitis
- Miscellaneous pancreas conditions
- Carcinoma of Pancreas

PANCREATITIS

البنكرياس يأكل نفسه ... Auto-digestion of Pancreas

ACUTE PANCREATITIS

ETIOLOGY:

- ✓ Most common cause is **Bile duct stones**
- ✓ 2nd most common: Alcoholism, Idiopathic, ERCP, trauma

CLINICAL PICTURE:

Male Patient, 50-60 years, History of Biliary dyspepsia, alcoholism, or trauma complaining of **MAJOR SYMPTOMS + MINOR SIGNS**

- ✓ C/O : Repeated vomiting,
Severe epigastric pain radiating to back
RELIEVED IN PRAYER POSITION
- ✓ O/E:
 - GENERAL: Fever, Tachycardia, Signs of MOF (Cyanosis, shock, jaundice)
 - LOCAL: Mild tenderness, rigidity, Cullen sign, Grey turner sign, Pseudo-pancreatic cyst, Shifting dullness, ↓Intestinal sounds

COMPLICATIONS:

- ✓ Most common Complication → **MOF**
- ✓ Pseudo-pancreatic cyst, Pancreatic abscess

INVESTIGATIONS:

✓ FOR DIAGNOSIS:

- ✓ Serum amylase (**NON SPECIFIC**, N. 100-300 somogi unit/dl)
 - a) Pancreatitis >1000 somogi unit/dl
 - b) ↓after 5 days → measure Urine amylase
- ✓ Serum Lipase → **MORE SPECIFIC**
- ✓ CT scan → Accurate for Localization
- ✓ X-ray → **COLON CUT-OFF SIGN + SENTINEL LOOP ILEUS**

✓ FOR CAUSE: Abdominal U/S

✓ FOR COMPLICATIONS: CBC, ABG, KFT, LFT, FBS, Serum Ca

TREATMENT... CONSERVATIVE

- 1) Resuscitation, monitoring
- 2) Analgesics (# Morphine), Antibiotics
- 3) NPO, NG suction
- 4) Respiratory support ... Ventilation ...
- 5) Re-assessment by ERCP

SURGICAL TTT only if indicated, TTT. Of cause

INDICATIONS OF SURGERY:

- ✓ Doubtful diagnosis → Explore the abdomen
- ✓ Late cases → Remove Necrotic tissue detected by CT
- ✓ Complicated cases (Left sided PH → Hassab's operation)

CHRONIC PANCREATITIS

ETIOLOGY :

- ✓ Persistent alcoholism
- ✓ Diseases of CBD .. stone, cholelithiasis

CLINICAL PICTURE:

- ✓ TYPE OF PATIENT : Male, 40-60 years
- ✓ TRIAD OF :
 - 1) **PAIN** ... Epigastric pain, radiating to the back, Recurrent ↓ by leaning forwards
 - 2) **D.M.**
 - 3) **MALABSORPTION** ... Loss of wt., Weakness, steatorrhea

INVESTIGATIONS:

✓ RADIOLOGICAL:

- 1) Plain X-ray abdomen → Calcification
- 2) U/S, CT scan, ERCP → Chain of Lakes

✓ LABORATORY :

- 1) Fetal Elastase level ... **NEGATIVE...**
- 2) Lundh's test
- 3) Glucose tolerance test ... **DM...**
- 4) 5 days Collection of Fat excretion

TREATMENT:

CONSERVATIVE :

- FOR PAIN... Stop alcohol, Give analgesics
- FOR DM .. diet, insulin
- FOR MALABSORPTION :
Pancreatic extract, H₂ receptor antagonists, restriction of Fat up to 25% , Supplement of Fat soluble vitamins

SURGICAL:

- Cutting greater Splanchnic Nerve
(If Pancreatic tail is affected)
- ERCP → TTT. Of stricture
- If Tail is affected → Distal pancreatectomy
- If Head is affected → Whipple's Operation

BAD PROGNOSTIC MARKERS RANSON'S CRITERIA

- | | |
|-----------------------------------|--------------------------------------|
| ✓ Age > 55 years | ✓ Base deficit > 4 mEq/L |
| ✓ FBS > 200 mg% | ✓ Estimated fluid sequestration > 6L |
| ✓ WBCs > 16,000/mm ³ | ✓ Serum Ca ⁺² < 8 mg% |
| ✓ SERUM LDH > 350 IU/ml | ✓ HCl ↓ > 10% |
| ✓ SGOT > 250 U% | ✓ BUN 5 mg% |

MISCELLANEOUS TOPICS:

INSULINOMA

(Tumor of beta cells of islets of Langerhans)

عبان نخبن لما بدوع بدوخ و بغمى عليه
و لما بأكل بيفى كويس

✓ Whipple's triad

- 1) Hypoglycemia
- 2) $G < 45 \text{ mg/dl}$
- 3) Improvement by Glucose

✓ Investigations :

- ✓ $\text{Glucose} < 45 \text{ mg/dl}$..DURING ATTACK
- ✓ $\uparrow \text{Insulin}$
- ✓ $\uparrow \text{C-peptide}$
- ✓ Localization by CT scan

GLUCONOMAS

مرض ببروح لبناع الجلدي عشان مشاكل فى رجليه و بكتشف
إن عنده السكر

- ✓ **DM** + **Necrotizing skin lesion**
- ✓ **Diagnosis:** Glucagon assay, CT scan

VIPOMAS

- ✓ Cholera resistant to TTT
- ✓ WDAHA syndrome

SOMATOSTATINOMA

مريض عنده السكر و حصوة فى المرارة
و ببندرز كثير و يملأ الفاعدة و البراز مبيغطش

- ✓ **DM**
- ✓ **GBS**
- ✓ Achlorohydia

ZOLLINGER ELLISON \$

✓ 2 types:

- a) Type 1: Hyperplasia of G-cells
- b) Type 2: tumor of pancreas

- ✓ **Diagnosis :** **EXTENSIVE PU**, **RECURRENT ULCER**, **STEATORRHEA**, Diarrhea, Bleeding, perforation

✓ Investigations :

- Localization by CT scan
- Gastrin level **Normal : $< 150 \text{ ng/L}$, ZES $> 500 \text{ ng/dl}$**

✓ TTT :

- ✎ Omeprazole
- ✎ Surgery according To CT Angiography
 - If detectable in Head $\rightarrow$ pancreaticoduodenectomy
 - If detectable in Body & tail $\rightarrow$ Distal Pancreatectomy
 - If Not detectable $\rightarrow$ Gastrectomy

PANCREATIC PSEUDOCYST

DEFINITION:

Collection of pancreatic secretions & inflammatory exudates within a lining of inflammatory tissue

ETIOLOGY:

- ✓ Acute pancreatitis.. 10%
- ✓ Pancreatic trauma
- ✓ Posterior Peptic ulcer

SITE:

- ✓ Lesser sac between pancreas & stomach

CLINICAL PICTURE:

- ✓ **SMALL** $\rightarrow$ Painless , may be discovered by follow up by U/S
- ✓ **LARGE** $\rightarrow$ Discomfort, swelling (Painless, Pulsating, Fixed)

INVESTIGATIONS:

- ✓ U/S, CT $\rightarrow$ **MOST ACCURATE**
- ✓ Barium meal $\rightarrow$ Forward displacement of stomach in lateral view

TREATMENT:

- ✓ Resolve spontaneously
- ✓ If persistent $> 6 \text{ weeks}$, $> 6 \text{ cm}$ $\rightarrow$ Cystogastostomy (for drainage)

CARCINOMA OF PANCREAS

ETIOLOGY: ... UNKNOWN but may be due to High protein diet, High fat diet, Smoking, Alcohol

PATHOLOGY:

- **SITE** ... From ACINAR, **DUCTAL CELLS** ... Major duct system (**PERI-AMPULLARY CARCINOMA**)
- **MACRO**... mass infiltrating edges, areas of Hemorrhage, Necrosis
- **MICRO**... Poorly differentiated Adenocarcinoma
- **SPREAD:** Direct, Lymphatic, Blood, Transcelomic

CLINICAL PICTURE:

CANCER HEAD OF PANCREAS

ELDERLY MALE WITH RAPIDLY PROGRESSIVE PAINLESS JAUNDICE

- ✓ Obstructive Jaundice ... Painless, Progressive, Olive green
- ✓ Hepatomegaly, Distended palpable GB (**COURVOISIER'S LAW**)

CANCER BODY OR TAIL

- ✓ **OCCULT MANIFESTATIONS** (Usual presentation):
 - Thrombophlebitis migrans ... **TROUSSEAU'S SIGN**
 - Enlarged LEFT supraclavicular LNs ... **TROISER'S SIGN**
 - Metastatic manifestations, Loss of Weight

**In PERI-AMPULLARY
Carcinoma**

**1 or 2 remissions of
Jaundice occur**

COMPLICATIONS:

- Obstruction → Malignant Obstruction Jaundice, Hematemesis, Melena (due to left sectorial PH)
- IVC obstruction → Lower limb edema

INVESTIGATIONS

- ✓ **FOR DIAGNOSIS:**
 - LFT ↑ Direct bilirubin, N. SGOT, SGPT, Prolonged PT
 - STOOL Clay colored, bulky, offensive, No stercobilinogen
 - URINE Dark colored, frothy, NO urobilinogen, ↑ Direct bilirubin
 - U/S: Intrahepatic biliary dilatation (if there's extrahepatic biliary obstruction)
 - ERCP, PTC → Biopsy, stent
 - BARIUM MEAL → Wide C-curve of duodenum
- ✓ **FOR STAGING:**
 - ENDOSCOPIC U/S → Degree of invasion
 - CONTRAST ENHANCED SPIRAL CT SCAN → Allows targeting FNAC of lesion
- ✓ **FOLLOW UP: TUMOR MARKERS** → CA19-9, CEA, POFA, PCAA
- ✓ **PRE-OPERATIVE:**
 - CBC, CXR, KFTs

TTT of Cancer Pancreas

OPERABLE

- ✓ Pre-operative preparation for Obstr. Jaundice (see GB)
- ✓ **SURGICAL TTT:**
 - Whipple's operation

INOPERABLE

- ✓ Endoscopic stenting
- ✓ Triple anastomosis

✓ **PROGNOSIS** → Extremely poor ... 5 years survival rate < 5%

GALL BLADDER & BILE DUCT

- Indications for choledochotomy at cholecystectomy are:
 - Dilated CBD.
 - Raised ALP (alkaline phosphatase).
 - Palpable stones in CBD.
 - ERCP is easier in patients with bile leaks because biliary tree is usually not dilated.
- One of advantages of MRCP is to delineate anatomy post biliary enteric anastomosis.
- Anticholinergic drugs and vasoconstrictors don't increase the tone of sphincter of oddi
- CLONORCHIS SINENSIS may cause cholangiocarcinoma
- Benign biliary duct stricture even a minor one can produce liver cirrhosis over time ,so it must be treated even if it is asymptomatic



PANCREAS

- DELTA CELLS not epsilon cells produce somatostatin.
- The standard supportive measures for patient with mild pancreatitis is IV fluid and electrolyte therapy only
- Serum amylase is not a component of Ranson's criteria and has no prognostic rule in acute pancreatitis
- Interpretation of Ranson's criteria:
 - Risk factors 3 : 1 % mortality
 - Risk factors 3 – 4 : 15% mortality
 - Risk factors 5 – 6 : 40% mortality
 - Risk factors >7 : 100%

GIT (3) QUESTIONS



- Calcular obstructive jaundice: Investigations, , Pre-operative preparation, Treatment

(Kasr: 2011, 3in shams: 2009, 2007,
Ain shams: 2007, Ain shams: 2009

- Complications of Gall bladder stones

(Ain shams: 2002, 2004- Azhar F: 2007, 2005,-
Azhar M: 2009, 2007, 2001, 2000 -

- D.D of obstructive jaundice, Investigations

Ain shams: 2005 , Azhar F: 2005, 2009

- CBD stone: C/P, investigations & TTT.

Ain shams: 2010

- Acute cholecystitis: C/P, investigations & TTT.

Ain shams: 2011

GALL BLADDER



1. 6F female (fatty, forty or fifty, fatty, fertile, flatulent) complaining of sudden onset of colic in right hypochondrium radiates to the back for less than 5 hours.

Biliary colic

2. 6F female (fatty, forty or fifty, fatty, fertile, flatulent) complaining of sudden onset of colic in right hypochondrium radiates to the back for more than 5 hours e severe nausea and may vomiting.

Acute calcular cholecystitis.

3. Usually immunocomprised patient complaining of sudden onset of colic in right hypochondrium radiating to the back for > 5 hours with severe nausea and vomiting.

Acute non calcular cholecystitis.

4. 6F female (fatty, forty or fifty, fatty, fertile, flatulent) complaining of recurrent attack of biliary colic and Murphy s sign is positive.

Chronic calcular cholecystitis.

5. 6F female (fatty, forty or fifty, fatty, fertile, flatulent) with history of biliary colic complaining of yellowish discoloration of the eye, dark frothy urine with bulky offensive clay colored stool e fever.

Calcular obstructive jaundice.

6. Old male complaining of yellowish discoloration of the eye, dark frothy urine with bulky offensive clay colored stool with marked weight loss, usually a febrile.

Malignant obstructive jaundice.

PANCREAS

1. Male 50-60 years of age with or without positive history to biliary dyspepsia , excess alcohol intake or iatrogenic trauma complains of severe epigastric pain radiating to back and repeated vomiting but local signs are not severe and increase serum lipase.

Acute pancreatitis.

2. Usually old male or female presents with symptoms of peptic ulcer resistant for treatment or recurrent after treatment, with or without diarrhea and steatorrhea.

Gastrinoma. (Zollinger Ellison Syndrome)

3. Old male with rapidly progressive painless jaundice with or without distended palpable GB.

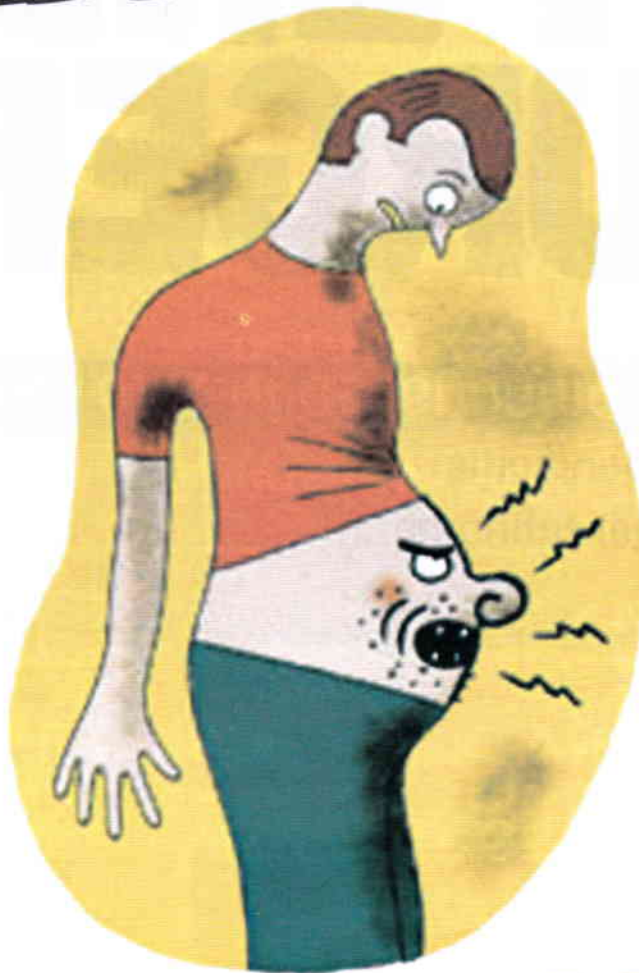
Cancer head of pancreas.





SURGI- TOONS

ACUTE ABDOMEN



Michael Safwat
MBBCh - Ain shams university

APPENDIX SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Appendicitis
- Argantafinoma

APPENDICITIS

MOST COMMON CAUSE OF ACUTE ABDOMEN

AGE& SEX GROUP

20 -30 years Male>female

Rare in children

- Serious → 80% perforate (late diagnosis)
- D.D. :
 - Non-specific Mesenteric Lymphadenitis
 - Deep iliac Adenitis

Rare in Old age

- High risk of perforation
- **SUSPECT CANCER CAECUM**

ETIOLOGY:

- ORGANISM → Ecoli (85%), staph, strept
- ROUTE OF INFECTION → Direct
- PREDISPOSING FACTORS:
 - 2/3 Obstruction.. **MOST COMMON & MOST IMPORTANT**
 - 1/3 anatomical

PATHOLOGY:

	Acute Obstructive (2/3)	Acute non-obstructive (1/3)
Catarrhal	Mucocele	Diffuse Inflammation
Supp.	Pyocele	Diffuse Inflammation
Gangrene	Common	Less common
	At Tip or at site of obstruction	At TIP ONLY
	Generalized peritonitis (Rapid perforation)	Localized Peritonitis (Delayed Perforation)

FATE OF APPENDICITIS

COMPLICATIONS

RESOLVE

GENERAL

- ⊖ Bacterimia
- ⊖ Septicemia
- ⊖ Toxemia
- ⊖ Pyemia

PORTAL PYEMIA

LOCALIZED

But Liabile for recurrence

GANGRENE, PERFORATION

- ⊖ SITE → tip of appendix, or at site of obstruction
- ⊖ SEQUELAE: Generalized or localized peritonitis

MASS (PHLEGMON)

- ⊖ PAIN > 2 DAYS
 - ⊖ TEMP. > 38
 - ⊖ D : U/S
 - ⊖ TTT: Conservative
- OSCHNER SHERREN REGIMEN**
- 1) Semi-sitting
 - 2) Ryle, line, catheter, fluids
 - 3) Monitoring
 - 4) IV Antibiotics
- ⊖ Appendectomy after 3 months

RESULTS

ABSCESS

S/S:

- ⊖ Throbbing pain
- ⊖ Hectic fever
- ⊖ Tachycardia

TTT:

- 1) Muscle cutting incision
- 2) Extra-peritoneal drain
- 3) Antibiotics

CHRONIC APPENDICITIS

S/S:

- ⊖ Recurrent attacks of Pain, Dyspepsia
- ⊖ Tender Right Iliac fossa

DIAGNOSIS:

Barium Enema

TTT:

Appendectomy

DD:

- IBS
- Amoebic colitis
- Chr. Calcular Cholecystitis
- Crohn's Disease

FISTULA

- Iatrogenic
- Drainage
- Crohn's disease

MASS	↓	-	Persists
FEVER	↓	↑(hectic)	↓
PAIN	↓	↑(throbbing)	↓
TTT	Appendectomy after 3 months	drain abscess + Oschner sherren regimen	Investigate for CANCER CAECUM

CONDITIONS WITHOUT MASS

- ⊖ Children <10 years
- ⊖ Elderly > 65 years
- ⊖ Pregnancy
- ⊖ Diabetics
- ⊖ Patient on Purgatives



TYPICAL PRESENTATION:

♣ Acute Pain :

- ⊖ Colicky
- ⊖ Peri-umbilical → after 6-10 Hrs becomes in Rt. Iliac fossa
- ⊖ Aggravated by movement or COUGH

♣ Anorexia , Nausea

♣ Vomiting Once in 75% of patients

♣ Constipation

Diarrhea may be Early OR IN:

- ⊖ Pelvic appendicitis.
- ⊖ Retro-Ileal Appendicitis.

واحد موظف صحي الصباح عيان .. بطنه منفوخة و مزندة ..
دخل الحمام معملش حاجة .. طلع منه قالوا له تعالى إفطر .. مرضيش
راح الشغل حاول يشرب سيجارة لقي طعمها متغير و بطنه لسة واجعا ..
على آخر النهار الوجع بقى فى جنبه اليمين ...
فراح للدكتور لقاه سخن شوية و الوجع على Mcburney's point

♣ General Exam.:

- ⊖ Mild fever <38
- ⊖ Tachycardia <100

♣ Local exam:

INSPECTION	↓ Movement , Rigidity
PALPATION	▪ Localized Tenderness ▪ Rebound Tenderness ▪ Guarding
AUSCULTATION	↓ intestinal Sounds
DRE	PELVIC APPENDIX



SPECIAL SIGNS

SIGN	CASE	EXPLANATION
ROVSING SIGN	CROSSED TENDERNESS أتك بايدي يتوجع (Pressure On Lt. iliac fossa → Pain on Rt. Iliac fossa)	Shifting of gases from pelvic colon to caecum
BLUMBERG'S SIGN	CROSSED REBOUND TENDERNESS أرفع إيدي يتوجع (Remove hand from Lt. Iliac fossa → Pain in Rt. Iliac fossa)	Localized Peritonitis
HYPERAESTHESIA OF TRIANGLE OF SHERREN	IN SUB-HEPATIC APPENDICITIS	irritation of parietal peritoneum
OBTURATOR SIGN (ZACHARY COPE)	IN PELVIC APPENDICITIS (Pain on internal rotation of flexed Right thigh)	irritation of obturator internus
PSOAS SIGN	IN RETRO-CAECAL TYPE Pain on Extension of right thigh	irritation of Psoas muscle
BALDWIN'S SIGN	IN RETRO-CAECAL TYPE Raising Rt. LL → pressure on Rt. Iliac fossa → Pain	

TENDERNESS ON EXAMINATION

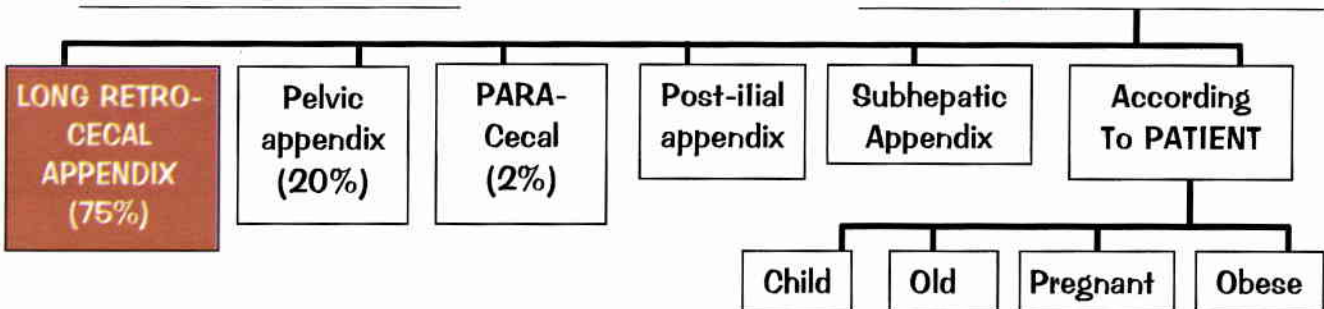
- ⊖ Localized tenderness
- ⊖ Rebound tenderness
- ⊖ Crossed (Rovsing's sign)
- ⊖ Crossed Rebound Tenderness (Blumberg's sign)



TYPES OF APPENDICITIS

TYPICAL

ATYPICAL



	SIGNS	EXPLANATION
LONG RETRO-CECAL APPENDIX (75%)	⊖ +ve Psoas sign ⊖ minimal Pain & rigidity ⊖ Ureteric colic, Hematuria	▪ Touch the psoas Muscle ▪ Caecum is present over appendix ▪ Touch ureter
PELVIC APPENDIX (20%)	⊖ +ve Obturator sign ⊖ McFadden sign ⊖ Dysentery & diarrhea ⊖ Appendix is felt in DRE	▪ Touch obturator internus Muscle ▪ Touch UB ▪ Touch rectum
PRE-CECAL (2%)	Classic clinical picture	
POST-ILIAL APPENDIX (MISSED APPENDICITIS)	⊖ Diarrhea followed by constipation (misdiagnosed as G.E.) ⊖ No localization → Generalized peritonitis ⊖ Affect Ileo-cecal Vein → Portal Pyemia ⊖ Affect Appendicular artery (end artery) → Gangrene	
SUB-HEPATIC APPENDICITIS	⊖ Young patient ⊖ Signs higher than McBurney's point ⊖ Hyperesthesia at Triangle of Sherren ⊖ Pain doesn't propagate to shoulder or back	
PREGNANT FEMALE	⊖ No Localization ⊖ pain displaces upwards ⊖ Fate : 1) Imperforate → PTL 2) Perforate → Abortion , PTL	→ Omentum is elevated
Child , Old , Obese		

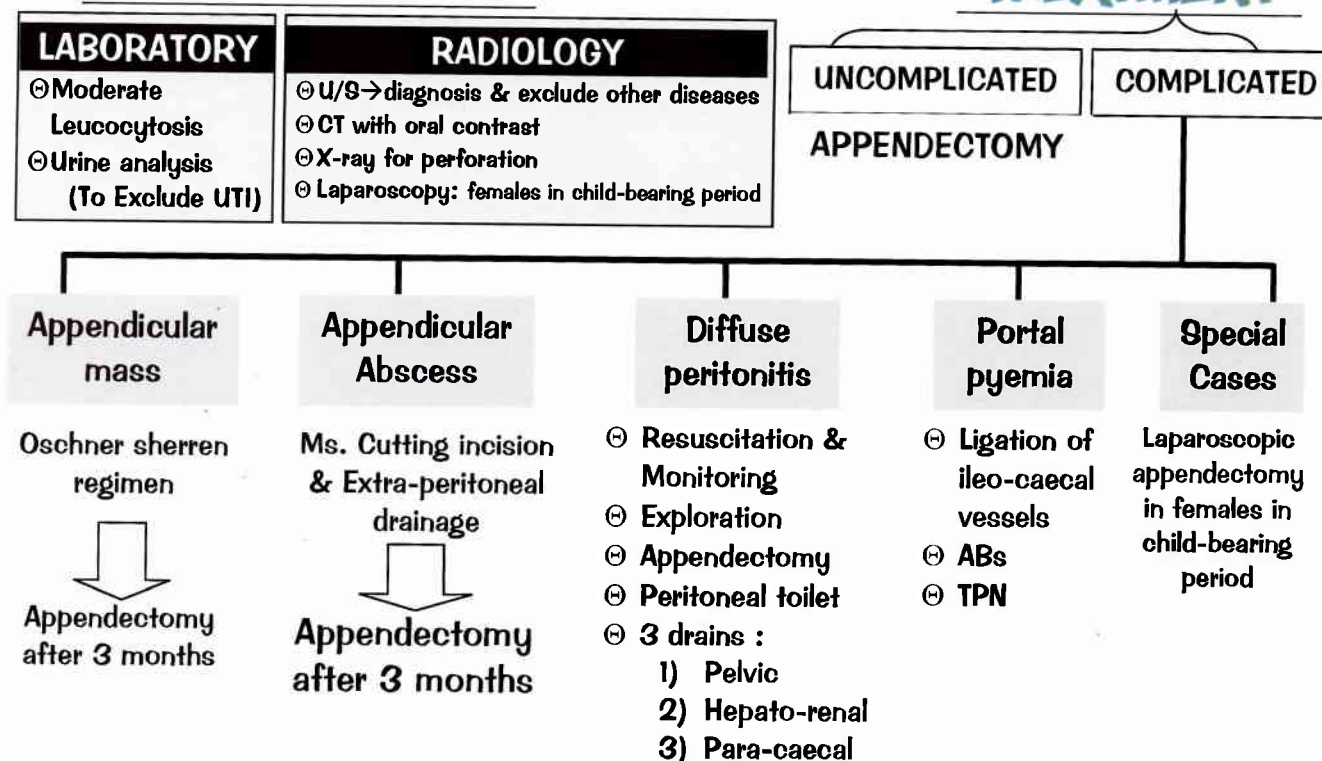
D.D.

SUBHEPATIC APPENDICITIS	ACUTE CHOLYSTITIS
Pt. is young	6F
Hyperesthesia at triangle of sherren	Hyperesthesia between 9 th , 11 th ribs posteriorly (BOAS sign)
Pain is not referred to shoulder or back	Pain is referred to shoulder or back

MANAGEMENT OF APPENDICITIS

INVESTIGATIONS

TREATMENT



POST-OPERATIVE:

Regular analgesics, IV fluids, Fasting till return of intestinal sounds, Antibiotics (3rd generation Cephalosporins) for 5 days.

ARGANTAFINOMA

CARCINOID TUMOR OF APPENDIX

- ⊖ **MOST COMMON TUMOR OF APPENDIX**
- ⊖ From Argantafin cells (Kulchitsky cells)
- ⊖ **70% in appendix** → majority occur **at the TIP**
- ⊖ **Locally malignant** (metastases in 4% of cases)
- ⊖ Discovered by routine Intra-operative Histo-pathological examination
- ⊖ Primary tumor producing serotonin → Destroyed in Liver → **NO Carcinoid \$**
- ⊖ Metastasis produce Symptoms due to entering of serotonin into circulation
→ **CARCINOID \$ (BOUNTS OF DIARRHEA, FLUSHING, BRONCHOSPASM)**
- ⊖ Treatment according to size :
 - 1) < 2 cm → Appendectomy
 - 2) > 2 cm → Right Hemi-colectomy

APUDoma

PERITONEUM SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Acute Peritonitis
- Sub-Phrenic abscess
- TB peritonitis, Mesenteric cyst,
Acute Non-Specific Lymphadenitis

ACUTE PERITONITIS

- ⊖ Organism → Gram-ve (**MOST COMMON IS E.Coli**)
- ⊖ Route of infection: Direct spread & Blood spread

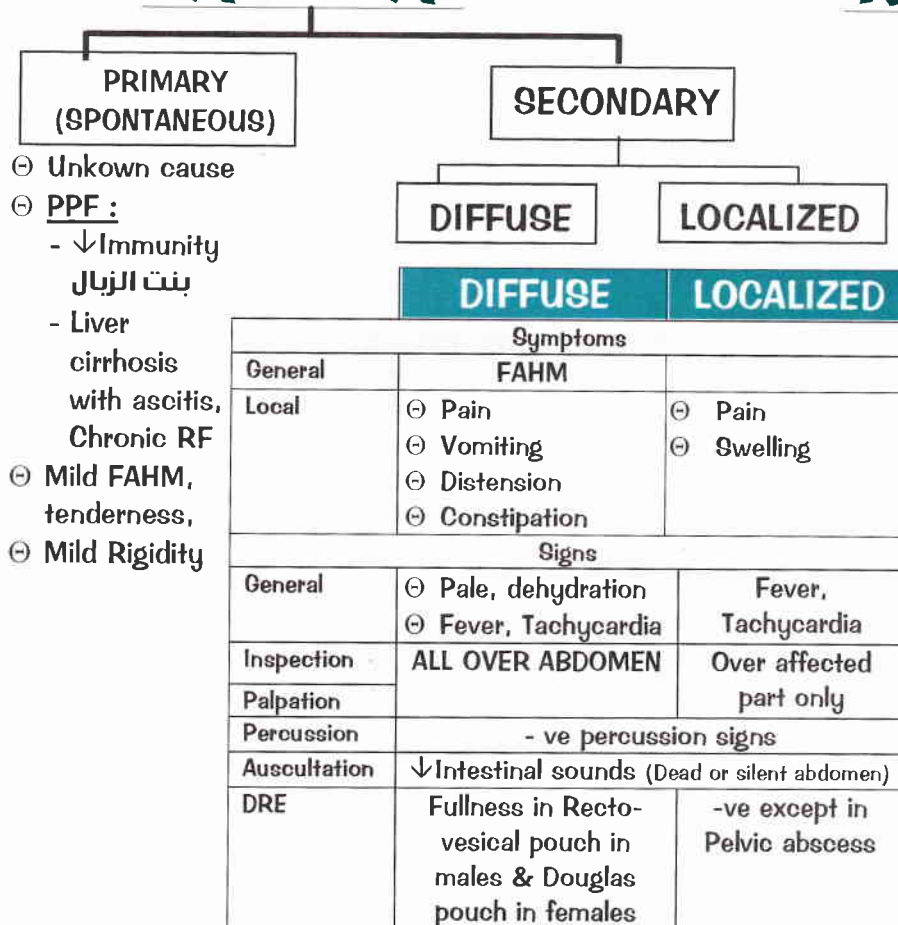
Factors facilitating Localization of infection

- Cavity is divided into 2 compartments (greater sac, lesser sac)
- ↓ Peristalsis
- Greater omentum is adherent to inflamed structures

TYPES

BACTERIAL

NON BACTERIAL



INVESTIGATIONS:

- ⊖ Leukocytosis
- ⊖ **US & Peritoneal diagnostic aspiration** → Intra-abdominal fluid & its nature
- ⊖ **X-ray abdomen** → indicate the cause, multiple fluid levels

TTT

- ⊖ Resuscitation & Monitoring
- ⊖ **Exploratory Laparotomy :**
Incision, toilet, identification of cause, Drainage, closure

- ⊖ Biliary peritonitis
- ⊖ Meconium Peritonitis

Acute peritonitis ال طقم

- ✦ **General:** Fever, tachycardia, shock
- ✦ **Inspection** ↓ Abdominal Movement
- ✦ **Superficial palpation** Guarding
- ✦ **Deep Palpation** Tenderness, rebound tenderness
- ✦ **Percussion** Shifting dullness
- ✦ Resonance if obstruction occurs
- ✦ **Auscultation** ↓ Intestinal sounds (Dead or silent abdomen)
- ✦ **DRE** Fullness in
 - Recto-vesical pouch in males
 - Douglas pouch in females

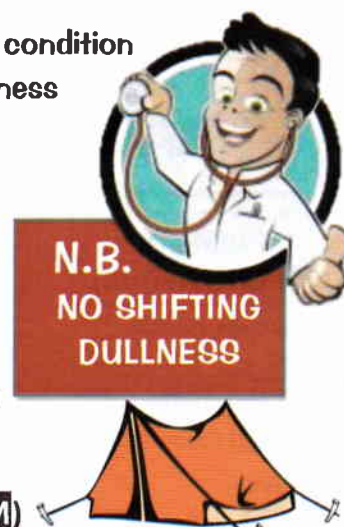
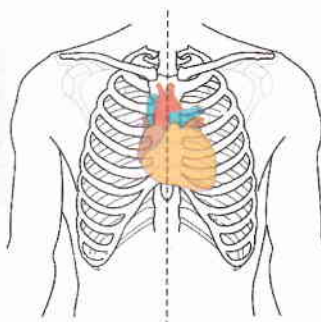
SUB-PHRENIC ABSCESS

- ⊖ Localized peritonitis Under Diaphragm
- ⊖ Commonest space to be affected → **HEPATO-RENAL SPACE OF MORISON**
- ⊖ C/O : Pain & **HICCOUGH**
- ⊖ O/E: Scheme +

- ♣ **HECTIC FEVER** , Tachycardia, Rapid deterioration of general condition
- ♣ Pleural effusion(Rare): ↓Chest movement , ↓Air entry, dullness
- ♣ **PALPATION**: Tenderness over lower ribs

♣ 4 PERCUSSION ZONES :

- 1) Resonant (lung)
- 2) Dullness (pleural effusion)
- 3) Resonant (Gas in abscess)
- 4) Dullness (pus in abscess)



⊖ Investigations :

- ♣ Best : **Abdominal U/S, CT**

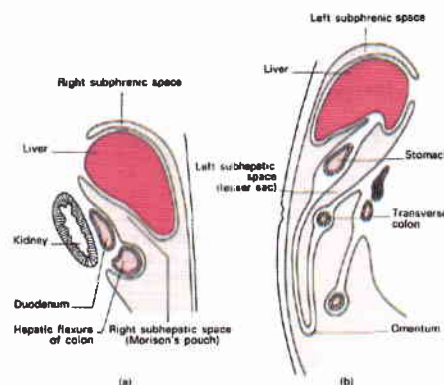
♣ CXR:

- ☑ Elevated cupula of diaphragm (**TENTING OF DIAPHRAGM**)
- ☑ Pleural effusion (Homogenous opacity obliterating Costo-phrenic angle, rising to axilla)
- ☑ Gas under diaphragm

⊖ Treatment :

- ℞ Analgesics, anti-pyretics , antibiotics
- ℞ Percutaneous drainage (US or CT guided)
- ℞ Open drainage

→ **Extra-pleural Extraperitoneal Approach**



	POSTERIOR SUBPHRENIC SPACE (MOST COMMON IS RIGHT SUBPHRENIC ABSCESS: HEPATO-RENAL ABSCESS)	ANTERIOR SUBPHRENIC SPACE
Right	⊖ <u>Above, in front:</u> Liver, GB ⊖ <u>Post , Behind :</u> Upper pole of right kidney , right suprarenal gland , second part of duodenum	space between : ⊖ diaphragm ⊖ Right lobe of liver ⊖ To the right of Falciform ligament
Left	LESSER SAC	⊖ Diaphragm ⊖ Left lobe of liver, stomach, spleen ⊖ To the left of falciform ligament
Approach to abscess	⊖ Sup-periosteal excision of 12th rib ⊖ Transverse incision ⊖ Burst abscess & Loculi ⊖ Drainage	⊖ Subcostal incision ⊖ All layer are divided except peritoneum ⊖ Burst abscess & Loculi ⊖ Drainage

TB PERITONITIS

⊖ Commonest route : **INTESTINAL TB, TABES MESENTERICA**

⊖ Commonest type is **ASCITIC TYPE**

⊖ CP :

**YOUNG TOXEMIC PATIENT WITH RECURRENT ATTACKS OF FEVER,
ABDOMINAL PAIN, DISTENSION, ABDOMINAL TENDERNESS**

⊖ Examination :

- Dough abdomen+ Palpable mass (**SAUSAGE SHAPED OMENTUM**)
- Percussion : Ascitis

⊖ Investigations :

1. CBC → Anemia, Lymphocytosis, ESR >100
2. Laparoscopy → Visualization & Biopsy
3. US & Tapping for ascitis

⊖ Treatment : **SANATORIAL → MEDICAL → If failed: SURGICAL**



MESENTERIC CYSTS

⊖ Commonest Cyst is **CHYLOLYMPHATIC CYST**

⊖ Signs : **TILLAUX TRIAD**

Cystic swelling near umbilicus

Crossed by band of
resonance of bowel

Mobile across **NOT ALONG**
root of mesentery



ACUTE NON SPECIFIC LYMPHADENITIS

ولد جاله دور برد و وجع فى جنب بطنه اليمين فتشك فى
الزايدة و بعددين إتقلب على جنبه الثانى فوجعه الجنب الشمال

:: SHIFTING TENDERNESS ::

WHEN TO SUSPECT??!

⊖ Suspect TB Peritonitis?

Young toxemic patient with Recurrent attacks of
Fever, abdominal pain, distension, abdominal tenderness

⊖ Suspect Pelvic abscess ?

General manifestations of pus appear + mucous diarrhea & burning micturition

⊖ Suspect Subphrenic abscess?

Persistent Hectic fever following abdominal operation or an inflammatory lesion in abdomen



INTESTINAL OBSTRUCTION

TOPICS DISCUSSED IN THIS CHAPTER:

- General Scheme
- Primary intussusception
- Volvulus
- Adhesive IO
- Mesenteric vascular occlusion
- Paralytic ileus
- Miscellaneous Topics

INTESTINAL OBSTRUCTION

- ☑ Most common cause of IO in children, adults is external strangulated hernia (In Egypt)
- ☑ Most common cause of small intestinal obstruction is Post-operative Adhesions (In USA)

CLINICAL PICTURE:

- ☑ Symptoms → Pain, distension, Vomiting & absolute constipation

:: PARALYTIC ILEUS IS PAINLESS ::

- ☑ In Colonic obstruction : vomiting may be delayed for 1-2 days
- ☑ Absolute constipation may be absent in :
 - ⊖ Early cases
 - ⊖ Intussusception
 - ⊖ Strangulation without obstruction (Richter's hernia, MVO)
 - ⊖ Gall stone ileus

Strangulation is suspected when:

- ☑ Pain becomes stabbing & is not relieved by Nasogastric tube
- ☑ General O/E: Toxic, shocked
- ☑ Local O/E: Surgical abdomen
- ☑ CBC: Leukocytosis

INVESTIGATIONS FOR IO

DIAGNOSIS

COMPLICATIONS

CBC, KFT, Electrolytes

PLAIN X-RAY ABDOMEN

ERECT

Multiple fluid levels

SUPINE

Level of obstruction:

- ☑ Jejunum : Vulvulae conniventes (Mucosal folds crossing side to the other)
- ☑ Ileum : Featureless
- ☑ Colon : Loss of Haustrations

U/S

Distended loops + special

BARIUM ENEMA

- ☑ Intussusception : Claw sign
- ☑ E.x. Sigmoid volvulus → "Ace spade deformity"

TREATMENT FOR IO

RESUSCITATION

Ryle, IV line , Catheter , Fluid monitor

- **IV LINE :**
 - Replacement of Lost fluid
 - Antibiotics
- **NG SUCTION:**
 - Decompress bowel
 - ↓ Risk of inhalation during induction of anesthesia
- **CATHETER**
 - Monitor urine output
- **MONITORING**
 - Vital data

CONSERVATIVE

- ☑ Adhesive IO → IV drip, NC suction
- ☑ 1ry Intussusception → Hydrostatic reduction by Barium enema
- ☑ Sigmoid Volvulus → Rectal Tube

SURGERY

- ☑ Exploration
- ☑ Determine level of Obstruction:
 - Above obstruction: Distension
 - Below Obstruction: Collapse
- ☑ Assessment of bowel viability

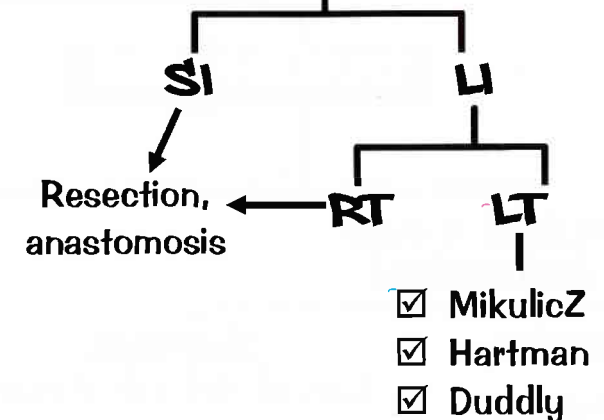
VIALE

Reduction

DOUBTFUL

Cover by hot packs, Pure O₂ for few minutes then re-asses

NON-VIALE



POST-OPERATIVE CARE

- ☑ Sedation
- ☑ NPO
- ☑ IV fluids 3 Liters Ringer lactate

PRIMARY INTUSSUSCEPTION

DEFINITION:

- ☑ It's invagination of Intussusceptum into the Intussuscepiens

PATHOLOGY:

- ☑ Most common site is **ILEO-CAECAL ..(75%)..**

ETIOLOGY:

- ☑ IDIOPATHIC
- ☑ Possible cause → **Adenovirus** occurring at **age of weaning (3-24 ms)**, during summer

CLINICAL PICTURE:

✓ **TYPE OF PATIENT:** Healthy male 3-12 months at the age of Weaning

✓ **SYMPTOMS :**

- **ATTACKS** of Colicky abdominal pain ...
(Crying, screaming, Drawing legs up) → Improved in-between attacks)
- **VOMITING**
- **ABSOLUTE CONSTIPATION** → Passage of blood stained mucous per rectum **" Red Currant Jelly stools "** ... **NO CONSTIPATION**

✓ **GENERAL:** ...**DEHYDRATION...**

✓ **LOCAL SIGNS:**

- **INSPECTION:** Visible peristalsis, Distension of abdomen
- **PALPATION:** **Sausage shaped mass , Sign de dance " empty Rt. Iliac fossa"**
- **PERCUSSION:** Tympanic resonance
- **AUSCULTATION:** MAD abdomen
- **DRE ..** May feel apex of intussusception → Finger is stained with Mucus & Blood

INFANT HAVING COLICKY PAIN WITH PASSAGE OF BLOOD STAINED MUCUS PER RECTUM "RED CURRANT JELLY STOOL" NO CONSTIPATION

INVESTIGATIONS:

- ⊖ **PLAIN X-RAY ERECT** (Multiple fluid levels) & **SUPINE** (detects distended loops)
- ⊖ **U/S** → **TARGET SIGN**
- ⊖ **BA ENEMA** → Diagnostic & Therapeutic ... **CLAW SIGN**
- ⊖ **FOR COMPLICATIONS** → CBC, KFT, ELECTROLYTES

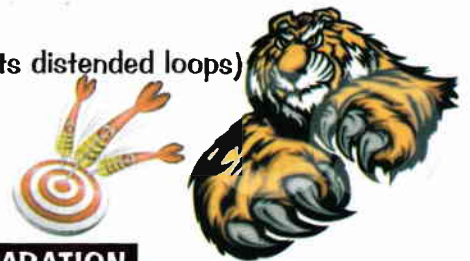
TREATMENT:

...URGENT OPERATION AFTER PREPARATION ...

- ♣ Pre-operative preparation → IV fluids, Abs. NG suction, Catheter, Monitor
- ♣ If Early, non-complicated → Hydrostatic reduction using barium enema
(Success → Filling of terminal ileum, Caecum, Appendix)
- ♣ If Late , Complicated → Surgical reduction by Squeeze method
- ♣ If gangrenous → Resection & End to end anastomosis
- ♣ If recurrent → stitching of terminal ileum to caecum

PROGNOSIS :

- ♣ High mortality in Gangrenous lesions
- ♣ 2% Recurrence



SECONDARY INTUSSUSCEPTION

(2ry to Polyp, lipoma, carcinoma, Meckel's div, HSP)

TTT: resuscitation, surgical reduction & TTT of cause

NO HYDROSTATIC REDUCTION



VOLVULUS

VOLVULUS OF PELVIC COLON

SITES:

- ✓ Most common site **Pelvic colon**

✓ PREDISPOSING FACTORS:

Old patient, chronic, constipation,
Narrow base & long mesentery

✓ PATHOLOGY:

CLINICAL PICTURE:

Type of Patient:

ELDERLY CHRONICALLY CONSTIPATED MALE

الراجل اللي في فرج بنته رقص فافش

Symptoms:

- ♣ Abdominal pain,
- ♣ Distension
- ♣ **ABSOLUTE** Constipation
- ♣ **Vomiting after 2 days**

Signs:

- ♣ **INSPECTION** → Distension, Visible peristalsis
- ♣ **PALPATION** → Tense balloon of Volvulus
- ♣ **PERCUSSION** → Tympanic abdomen
- ♣ **AUSCULTATION** → **MAD** abdomen
- ♣ **DRE** → Empty Rectum

COMPLICATIONS:

- ✓ Shock & Toxemia, peritonitis

INVESTIGATIONS: Scheme +

- ⊖ Plain x-ray supine: **"Omega sign"**
- ⊖ Ba enema: **"Ace spade deformity"**
- ⊖ For Complications → CBC, KFT, Electrolytes

TREATMENT: as scheme +

♣ PRE-OPERATIVE PREPARATION:

Ryle, line, catheter, fluid, monitor

♣ CONSERVATIVE TTT:

If early, non-complicated → **Rectal tube**
is tried, and then patient is prepared
for elective Resection of sigmoid
(Success → Gush of Gases & Fluid stools)

♣ SURGICAL TTT:

If late & Non-complicated → Colopexy to
post abdominal wall (If short segment)

♣ If Late & complicated → Mickuliz, Hartman

♣ POST-OPERATIVE CARE:

NPO, Sedatives, analgesics, IV fluids

VOLVULUS NEONATORUM



- ✓ Twisting of Midgut in

CLOCKWISE DIRECTION

- ✓ Patient : Infant 5-6 days old

- ✓ Investigations : Plain X-ray
abdomen + Doppler US

- ✓ Treatment :

- ♣ Resuscitation &
untwisting of Volvulus
- ♣ 2ry look procedure before
removing of bowel
(avoid Short bowel \$)



ADHESIVE IO

- ✓ **INCIDENCE:** Most common
cause of small intestinal
obstruction is Adhesions

- ✓ **ETIOLOGY:** **POST-OPERATIVE**
(MOST COMMON)

- ✓ **CLINICAL PICTURE:**

Same as scheme+ Presence of scar or
History of previous operation

- ✓ **TREATMENT:** **CONSERVATIVE** (IV
fluids, NG suction, Observation)

- ♣ If failed >72hours, Complicated:

Surgical interference

- ♣ If Recurrent: Nobel's plication

MESENTERIC VASCULAR OCCLUSION (MVO)

- ☑ Occlusion of Superior mesenteric artery or one of its branches
- ☑ ETIOLOGY:
 - **ARTERIAL EMBOLISM** (MOST COMMON CAUSE),
 - Arterial Thrombosis, Venous Thrombosis
- ☑ CLINICAL PICTURE:
 - ♣ TYPE OF PATIENT: Elderly (Thrombosis) or Young Adults (Embolism)
 - ♣ SYMPTOMS ACUTE IO + STRANGULATION
 - Stabbing pain in abdomen not relieved By antispasmodics, or NG suction
 - BPR, Vomiting, Diarrhea
 - OF COMPLICATIONS → Shock, toxemia
 - ♣ SIGNS:
 - GENERAL → Shock, Toxemia
 - LOCAL → Guarding, tenderness, rebound tenderness
- ☑ INVESTIGATIONS: Scheme +
 - ♣ Mesenteric angiography (or duplex US)
 - ♣ Plain x-ray → Multiple Fluid levels may NOT be present, Intestinal Necrosis (Late)
 - ♣ CT scan
 - ♣ FOR COMPLICATIONS → CBC, KFT, ↑ serum Amylase, Serum Phosphate level, Metabolic acidosis
 - ♣ FOR ETIOLOGY: ... ECG, Echo, U/S
 - ♣ Exclude pancreatitis → Serum amylase (may be slightly increased in 5% of PTs)

TREATMENT OF MVO

RESUSCITATION

(IV fluids, Abs, Heparin continuous infusion and stopped during surgery)

URGENT LAPAROTOMY & EXPLORE

IF VIABLE INTESTINE

IF GANGRENOUS

Resection & Avoid Primary anastomosis

IF THERE'S EXTENSIVE GANGRENE → 2ry Look after 48 hours

EMBOLUS

Embolectomy

THROMBUS

Streptokinase
thrombolysis or
Bypass

POST-Operative:

Heparin, discharge under oral anticoagulants for 3 months

PROGNOSIS

Mesenteric VENOUS occlusion (30%), Mesenteric ARTERIAL occlusion (45%),
Mesenteric THROMBOSIS > Mesenteric EMBOLISM

PARALYTIC ILEUS

DEFINITION

- Failure of neuromuscular mechanism leading to failure of peristaltic waves of Intestine with patent Lumen

ETIOLOGY:

- Reflex inhibition of Intestinal Motility → AFTER MAJOR ABDOMINAL OPERATION
- Toxic Inhibition → Peritonitis, Typhoid
- Metabolic Abnormalities → Hypokalemia, uremia, DKA
- Drugs → Anticholinergics, TCA

PATHOLOGY:

- Most common affected site → ILEUM

CLINICAL PICTURE:

- Type of patient → 3rd DAY POST-OPERATIVE
- SYMPTOMS → As IO + ...
 - ✓ Painless
 - ✓ Vomiting is Repeated, effortless
 - ✓ Constipated, may pass Passive flatus لو دست علی بطنه
 - ✓ Auscultation : Dead silent + Tinkling sound
- GENERAL SIGNS → Shock + C.P. of Cause "Uremia, Hypokalemia"
- INSPECTION → Distension, Scar of previous operation, No visible peristalsis
- PERCUSSION → Tympanic abdomen, Pseudo-shifting dullness
- AUSCULTATION → Dead silent abdomen, High Pitched Tinkling abdominal sound

PARALYSIS:

- Of GI → Paralytic ileus
- Of Stomach → Acute gastric dilatation
- Of Colon → OGILVIE \$

IF > 3 DAYS POST-OP

Suspect:

- Peritonitis
- Adhesive Intestinal Obstruction

INVESTIGATIONS:

- Plain x-ray abdomen → Multiple fluid levels
- LABORATORY → CBC, KFTs, Serum Electrolytes

TREATMENT:

PROPHYAXIS:

- PRE-OPERATIVE → Correction of Electrolyte imbalance
- INTRA-OPERATIVE → Gentle manipulation
- POST-OPERATIVE → NPO until intestinal peristalsis

ACTIVE TREATMENT:

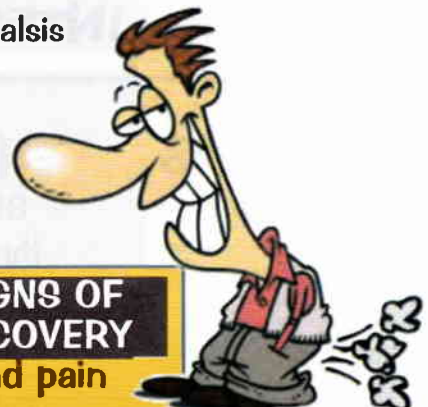
- TTT of cause
- Ryle, line, fluids, Abs
- Sedation by pethidine
- Observation for signs of recovery
- Don't use PROKINETICS الضرب في المبت حرام

POST OPERATIVE CARE

- Sedation
- NPO
- IV FLUIDS

SIGNS OF RECOVERY

- Wind pain
- Flatus
- ↓ Distension
- ↓ Aspiration



MISCELLANEOUS TOPICS

OTHER TYPES OF INTESTINAL ISCHEMIA

Non-occlusive ISCHEMIA

- CAUSE: Sudden $\downarrow$ COP due to any cause.. ex. Arrhythmia
- PATIENT: A critically ill patient in ICU with Sudden hypotension
- C/O : Acute abdomen, BPR
- X-ray : **THUMB PRINTS**
- Treatment : CONSERVATIVE

CHRONIC INTESTINAL ISCHEMIA:

- Patient with atherosclerosis
- CLINICAL PICTURE: **Post-cibal angina** 15-30 min after meals

MECONIUM ILEUS

- ✓ In neonates
- ✓ May be associated with **Cystic fibrosis** (10%)
- ✓ Site : **Ileum**
- ✓ Etiology : **Thick** inspissiated meconium
- ✓ X-ray : **scheme + Ground glass appearance**
- ✓ Treatment : **N-acetyl cysteine Barium enema**

MECONIUM PLUG \$

- **Distal** colon
- Thick plug of meconium
- TTT : **Gastrograffin enema**

NEC

- **Ileum & Rt colon**
- X-ray : **Pneumatosis intestinalis**



NEONATAL INTESTINAL OBSTRUCTION

ETIOLOGY:

From Lumen:

- ☑ Meconium ileus
- ☑ Meconium plug

From Wall:

- ☑ Congenital atresia
- ☑ Annular pancreas
- ☑ Hirschsprung dis (CONG. Megacolon)
- ☑ Imperforate anus

Outside wall:

- ☑ Volvulus neonatorum
- ☑ Irreducible congenital hernia

CLINICAL PICTURE.

Clinical picture of IO :

- ✓ Vomiting
- ✓ Colicky abdominal Pain
- ✓ Absolute constipation
- ✓ Abdominal distension & visible peristalsis

Clinical picture of the cause :

- ✓ Volvulus neonatorum → BPR
- ✓ Imperforate anus :
 - 1) Associated VACTERL anomalies
 - 2) Impulse on crying in low anomalies
 - 3) Presence of anal dimple
- ✓ Hirschsprung's disease :
 - 1) Delayed passage of meconium > 24 hours
 - 2) Empty rectum
 - 3) Grips on finger → Gush of stools on withdrawal



INVESTIGATIONS

- ✓ Plain X-ray abdomen erect& supine
- ✓ Hirschsprung's disease → barium enema, Rectal Biopsy
- ✓ Imperforate anus → Invertogram to detect low vs. high anomalies & IVP for associated anomalies

TREATMENT

Pre-operative preparation:

- ☑ Ryle → suction
- ☑ Line → IV fluids, electrolytes
- ☑ Catheter → monitor urine output

Operative treatment:

- ☑ Time → 10 months, 10 Kg, Hb:10mg/dl
- ☑ If Hirschsprung's disease → Swenson's operation
- ☑ If High Imperforate anus → Staged operation (x3
- ☑ If Low imperforate anus → Simple excision, cruciate incision



1. Young adult presents with acute severe ill-defined colicky abdominal pain started Peri-umbilical then shifted to the right iliac fossa with and rarely without vomiting and usually gives history of constipation.

Acute appendicitis.



2. Male or female with persistent hiccough, throbbing pain, hectic fever, rapid deterioration of the general condition with previous history of inflammatory lesion in abdomen.

Sub-phrenic abscess.

3. Healthy infant male between 3 & 12 months presents with attacks of colicky abdominal pain and passage of blood stained mucus per rectum.

Primary intussusception.

4. An elderly constipated male with repeated episodes of abdominal pain presented with sudden severe colicky pain with marked distention in flanks from left side towards the umbilicus absolute constipation and delayed vomiting.

Volvulus of the pelvic colon.

5. Adult patients with history of recent abdominal or gynecological operation presents with colicky abdominal pain, absolute constipation, vomiting.

Adhesive intestinal obstruction.

6. 6-An adult presents mostly 3rd day postoperative by abdominal distention, absolute constipation and repeated effortless vomiting

Paralytic ileus.

GIT (4) QUESTIONS



INTESTINAL OBSTRUCTION:

- Acute Intestinal obstruction : Symptoms , Signs & Investigations
(Azhar M: 2005 - Azhar F: 2009)
- Causes of Intestinal obstruction in old age
(Azhar M: 2001)
- Explain why: Pt. with adhesive intestinal obstruction should be given a chance of conservative TTT.
(Kasr: 2008)
- Intussusception : Causes , C/P & TTT
(Zin shams: 2001)
- Infantile intussusception: C/P, Investigations & TTT.
(Zin shams: 2011- Azhar M: 2006)
- Mechanical Intestinal obstruction: Management
(Azhar F: 2007, 2005)
- Paralytic ileus
(Azhar M: 2004 - Azhar F: 2005)
- Volvulus , Management of Sigmoid volvulus
(Azhar F: 2010 , Zin shams: 2005)



SURGI- TOONS

BOWEL SMALL & LARGE INTESTINE



Michael Safwat
MBBCh - Ain shams university

SMALL INTESTINE SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Meckel's diverticulum
- TB of Intestine
- Intestinal trauma

MECKEL'S DIVERTICULUM

✓ DEFINITION:

- Persistent patency of proximal part of vitello-intestinal duct

✓ INCIDENCE :

- Most common cause of **BLEEDING PER RECTUM IN CHILDHOOD**
:: Especially if complicated with PU ::
- Most common congenital anomaly in GIT
- **"RULE OF 2"** (2% of Pop, 2% complicated, Male > Female 2:1, 2 inches long, 2 feet from ileo-caecal valve)



✓ PATHOLOGY:

- **TRUE** diverticulum → All layers of bowel wall are present
- Arises from **ANTI-MESENTERIC BORDER**
- May Contain **ECTOPIC TISSUE** (e.g. gastric tissue ... liable to PU)

✓ CLINICAL PICTURE:

- Mostly **ASYMPTOMATIC**, But most common complaint is Bleeding

✓ COMPLICATIONS:

INTESTINAL OBSTRUCTION

(MOST COMMON)

- ✓ Intussusception
- ✓ Volvulus

PEPTIC ULCER

Child 8-10 years old, with abdominal pain, melena, or C/P of Peritonitis if perforated

D.D. OF BPR IN A CHILD:

- Meckel's Diverticulitis+ PU
- Angiomatous malformation
- Typhoid
- Colonic polyp

MECKEL'S DIVERTICULITIS

Picture **SIMILAR** to Appendicitis BUT Appendix is found **NORMAL INTRA-OPERATIVE**.

D.D. APPENDICITIS

LITTRE'S HERNIA

STRANGULATION WITHOUT OBSTRUCTION

D.D. STRANGULATION WITHOUT OBSTRUCTION

- ✓ Most common DD is Acute appendicitis (Differentiation is intra-operative)
Meckel's diverticulum is more dangerous ... because it's easier to be perforated,
Difficult localization of bleeding due to Central position

✓ Investigations قاعدة دم في البطن

- ⊖ Best: **Tc99** .. can demonstrate gastric mucosa
- ⊖ Angiography : weeping Meckel's (0.5 ml/min)

✓ Treatment :

℞ **SYMPTOMATIC** → wedge resection & closure of defect

℞ **ASYMPTOMATIC:**

- With an indication for surgery → **RESECTION**
- NO indication for surgery → **LEAVE IT ALONE**



INDICATIONS OF SURGERY

- ✓ Narrow Meckel's div.
- ✓ Thick wall
- ✓ Band of Adhesions
- ✓ Young adults, Children

TB OF INTESTINE

	ULCERATIVE TYPE	HYPERTROPHIC TYPE
ETIOLOGY - ORGANISM - ROUTE - PDF	Mycobacterium Tuberculosis 2ry to pulmonary TB, or Intestinal Bad immunity	Mycobacterium Bovis Ingestion of Infected Milk Relatively good immunity
PATHOLOGY - Site - Shape - Number - Base - Floor - Edge	Terminal ileum (Peyer's patches) Transverse Multiple Indurated Caseous material Undermined, Cyanotic margin	Ileo-cecal region NO caseous necrosis
CLINICAL PICTURE - Patient - General - Local	Usually Adult, Bad immunity Signs of TB, ↓WT, anemia Diarrhea, colicky pain, Bloody stool	Child, good immunity ↓WT, anemia Diarrhea, Pain, Mass in Rt. Iliac fossa
COMPLICATIONS	- Stricture → IO - Perforation ...rare	- Stricture → IO - Fecal fistula
INVESTIGATIONS	LABORATORY: - CBC → Anemia, Lymphocytosis ↑ESR, +ve CRP +ve Tuberculin Test - Stool Culture on Lowenstein jehnsen media - PCR	
	RADIOLOGICAL: Ba meal follow-through +ve STERLIN's SIGN "Non-visualization of caecum, Terminal ileum"	RADIOLOGICAL: Ba meal follow-through Narrowing of Ileum with Elevated Caecum
TREATMENT	SANATORIAL TTT. + ANTI-TB DRUGS	
	SURGICAL TTT: Resection & Anastomosis ... (Perforation, stricture, bleeding)	SURGICAL TTT: Right Hemi-colectomy ... (Perforation, Fecal fistula, Obstruction)

ILEOCAECAL ACTINOMYCOSIS

- ✓ Multiple sinuses discharging pus containing sulphur granules
- ✓ No LN spread



Most common malignant tumor of SI

- 1) Adenocarcinoma
- 2) Carcinoid tumor

INTESTINAL TRAUMA

☑ ETIOLOGY:

- Open, Closed, Iatrogenic

☑ TYPES OF INJURY



CONTUSION,
HEMATOMA

RUPTURE



TEARS OF MESENTERY
OF MESENTERIC
BLOOD VESSELS



☑ CLINICAL PICTURE:

- C/O ... History of trauma, abdominal pain
- GENERAL SIGNS ... Tachycardia, fever, Hypotension
- LOCAL SIGNS:

SIGNS OF INJURY

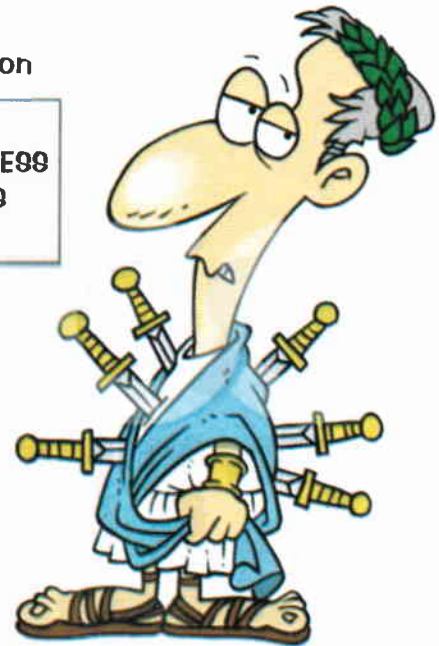
- TENDERNESS
- REBOUND TENDERNESS
- SHIFTING DULLNESS
- DISTENSION

☑ COMPLICATIONS:

- Peritonitis
- Internal Hemorrhage
- Hypovolemic, Septic shock
- Paralytic ileus

☑ INVESTIGATIONS:

- ⊖ DIAGNOSIS IS MAINLY CLINICAL
- ⊖ LABORATORY INVESTIGATIONS:
 - Leucocytosis, Hemodilution
- ⊖ RADIOLOGICAL INVESTIGATIONS:
 - Plain X-ray abdomen → Free air under diaphragm, Multiple fluid levels, Fractures
 - U/S , CT scan → Hematoma, intra-peritoneal collection



☑ TREATMENT:

ABCD +
LAPAROTOMY +
TETANUS TOXOID

ALL INTESTINAL INJURIES
REQUIRE LAPAROTOMY

SMALL INTESTINE,
RIGHT COLON

- TIDY, SHARP → Resection, anastomosis for ischemic & gangrenous parts
- RAGGED → Trimming of edge, suturing

TRANSVERSE,
LEFT COLON

- LOCALIZED → Exteriorization
- IF RESECTION IS INDICATED → HARTMAN's , MICKULIZ

LARGE INTESTINE SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Hirschsprung's disease
- Diverticular disease
- Benign Colorectal tumors
- Colorectal carcinoma
- Inflammatory bowel disease
- Rectal prolapse

HIRSCHSPRUNG DIS

"CONGENITAL MEGACOLON"

"AGANGLIONIC MEGACOLON"

- ☑ 6% Familial
- ☑ Associated with Down's in 10% of cases

PATHOLOGY:

Macroscopic picture:

	SPASTIC SEGMENT	TRANSITIONAL ZONE	PROXIMAL DILATED
Ganglia	-ve	few	NORMAL
shape	Collapsed	conical	dilated

Microscopic Picture: Absence of Auerbach's ganglia in Musculosa & Meissner's plexus in Submucosa

CLINICAL PICTURE:

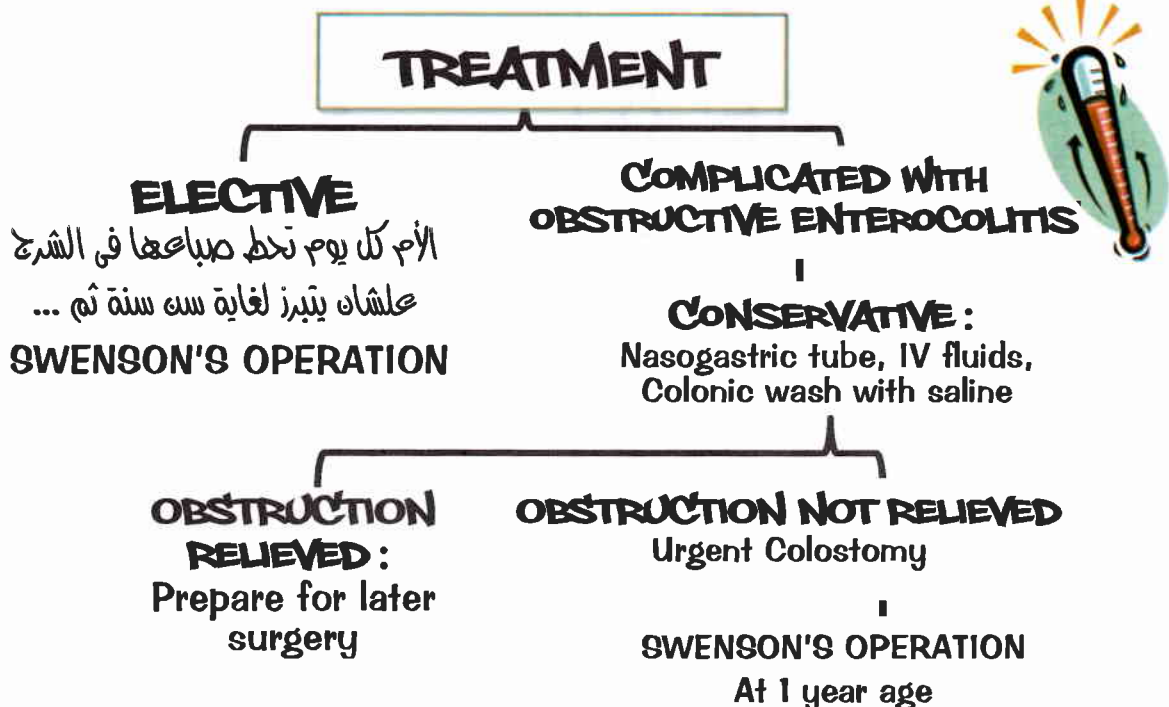
- New born presented with delayed passage of meconium > 24 Hrs.
- Defecation occurs after insertion of finger of mother in anus of baby
- DRE: Grips on finger → Gush of fetid stool in withdrawal

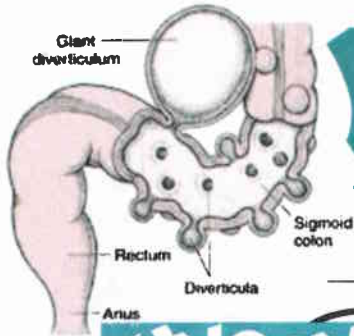
COMPLICATIONS:

- Obstructive toxic enterocolitis, Acute Obstruction
- Delayed Growth, Failure to thrive, Chest infection

INVESTIGATIONS:

- BARIUM ENEMA (WITHOUT PREPARATION OR DRE)
Narrow aganglionic segment with marked proximal colonic dilatation.
- RETAL BIOPSY (FROM MUCOSA & SUBMUCOSA)
MOST DIAGNOSTIC INVESTIGATION, Shows: Absence of Ganglion cells





DIVERTICULAR DISEASE OF COLON

INCIDENCE:

- ✓ False, Pulsion diverticulum
- ✓ ↑ in Western countries > Urban
- ✓ Site : Sigmoid colon, RECTUM
IS NEVER AFFECTED
- ✓ Not Pre-carcenous

UNCOMPLICATED

80%

- ✓ Asymptomatic or Discovered accidentally during enema insertion
- ✓ INVESTIGATIONS:
Barium Enema → SAW TOOTH APPEARANCE
- ✓ TREATMENT: High fiber diet & antispasmodics

COMPLICATED

ACUTE DIVERTICULITIS

PERFORATION

FISTULA

GENERALIZED
<48 Hrs.

LOCALIZED
>48 Hrs.

- ✓ INVESTIGATIONS → CT SCAN
- ✓ TREATMENT :
 - Rest, analgesics, antipyretics, antibiotics
→ Incision & U/S guided Drainage
 - Peritonitis → R&M, laparotomy, Peritoneal toilet, Drain, Resection
 - Fistula → Resection, Repair

BLEEDING PER RECTUM

BPR IN ELDERLY

MASSIVE DIVERTICULUM	MILD CANCER COLON
-------------------------	-------------------------

- ✓ INVESTIGATIONS:
 - ♣ Angiography
 - ♣ Sigmoidoscopy to Exclude Carcinoma
- ✓ TREATMENT:
 - Resuscitation → Angiography → Regional resection
 - If Failed → Total Colectomy + Ileo-Rectal anastomosis

CHRONICITY

- ✓ Recurrent Attacks of Abdominal pain + Passage of BPR
- ✓ Treatment :
Colectomy after preparation

BENIGN COLORECTAL TUMORS

JUVENILE POLYPS :

- ✓ Solitary
- ✓ NEVER turns Malignant
- ✓ Site : Recto-sigmoid
- ✓ Cl.Pict : BPR

PEUTZ JEGHER \$

- ✓ Autosomal dominant
- ✓ 3 M :
 - ♣ Multiple polyps
 - ♣ Melanotic pigmentation
 - ♣ Malignant potential 2%
- ✓ BPR in childhood

FAMILIAL POLYPOSIS COLI (FPC)

- ✓ AUTOSOMAL DOMINANT, On long arm of Chromosome 5
- ✓ May be a part of :
 - ♣ GARDENER'S \$ (جلد و عظم و ممبران) → AUTOSOMAL DOMINANT
 - ♣ TURCOT \$ (منخ و ممبران) → AUTOSOMAL RECESSIVE
- ✓ PATHOLOGY:
 - Site: Sigmoid colon, Rectum ... (More on the Left side)
 - 100% of untreated cases turn Malignant BY THE 5TH DECADE
- ✓ CLINICAL PICTURE:
 - PATIENT: Male, Pubertal age, with positive family history
 - C/O: Diarrhea, BPR, Abdominal pain
 - O/E: Bad general condition, anemia, DRE → Polyps
- ✓ INVESTIGATIONS → Ba enema, Colonoscopy & Biopsy
- ✓ TREATMENT... SURGICAL → Pan-procto-colectomy with permanent Ileostomy
- ✓ Family Screening should be done At age of 10 years, every 2 years

ADENOMATOUS POLYP

Risk of malignancy depends on SIZE

VILLOUS ADENOMATOUS POLYP

- ✓ Carpet tumor
- ✓ K+ losing tumor → Diarrhea, Hypokalemia
- ✓ 50% turn malignant

MCQ
للرُكْب !!



COLORECTAL CARCINOMA

✓ DEFINITION:

- Cancer colon is **PROXIMAL** to the point where the 2 anti-mesenteric Taenia Coli converge
- Cancer Rectum is **DISTAL** to this point

✓ INCIDENCE:

- Peak incidence at **60s**, More common in Males except Cancer caecum

✓ ETIOLOGY & PRESISPOSING FACTORS:

CHRONIC IRRITATION

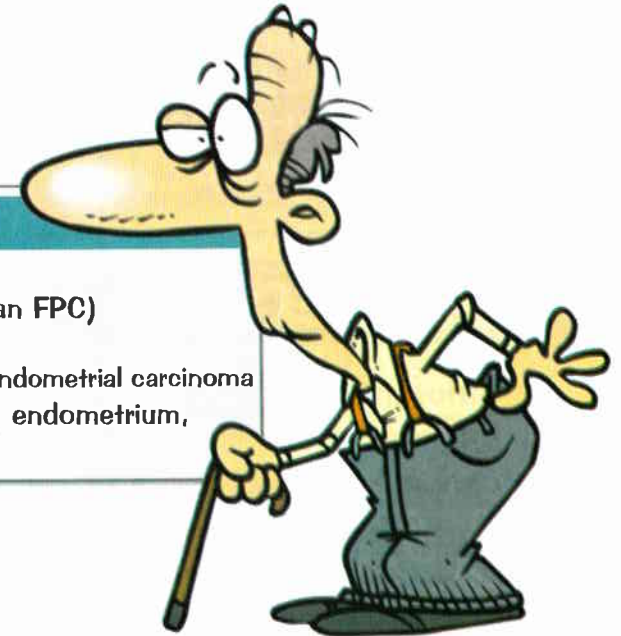
Dietary factors,
smoking, Alcohol,
Uretero-colic
anastomosis, IBD

BENIGN PRE-CANCEROUS LESIONS

Villous Adenomatous
polyp > 2 cm

GENETIC FACTORS

- FPC, Gardner's \$
- LYNCH \$... (on Rt. side, Better prognosis than FPC)
 - LYNCH I → Cancer colon
 - LYNCH II → Cancer colon + Cancer ovary, Endometrial carcinoma
- LE FRAUMINI \$(Error in P₅₃) → Cancer breast, endometrium, Colorectal cancer



✓ PATHOLOGY:

✓ SITE :

- Most common site is **RECTUM, SIGMOID COLON**
- **25%** in Rt. Colon, Least affected site is **TRANSVERSE COLON**
- **5% MULTI-FOCAL** → "Colonoscopy to the caecum is Essential"

✓ **MACROSCOPIC:** Ulcerative (**MOST COMMON, LT. SIDE**) , Cauliflower (least malignant, Rt. side), Annular

✓ **MICROSCOPIC :** Adenocarcinoma, Colloid, anaplastic

✓ SPREAD:

- **DIRECT** → Spread in Upwards direction , ¼ circle every 6 months
- **LYMPHATIC, BLOOD (BLBL), TRANS-PERITONEAL**

✓ COMPLICATIONS:

- **MOST COMMON COMPLICATION IS INTESTINAL OBSTRUCTION**
- Perforation
- Fistula
- MILD Bleeding

DUKE'S CLASSIFICATION

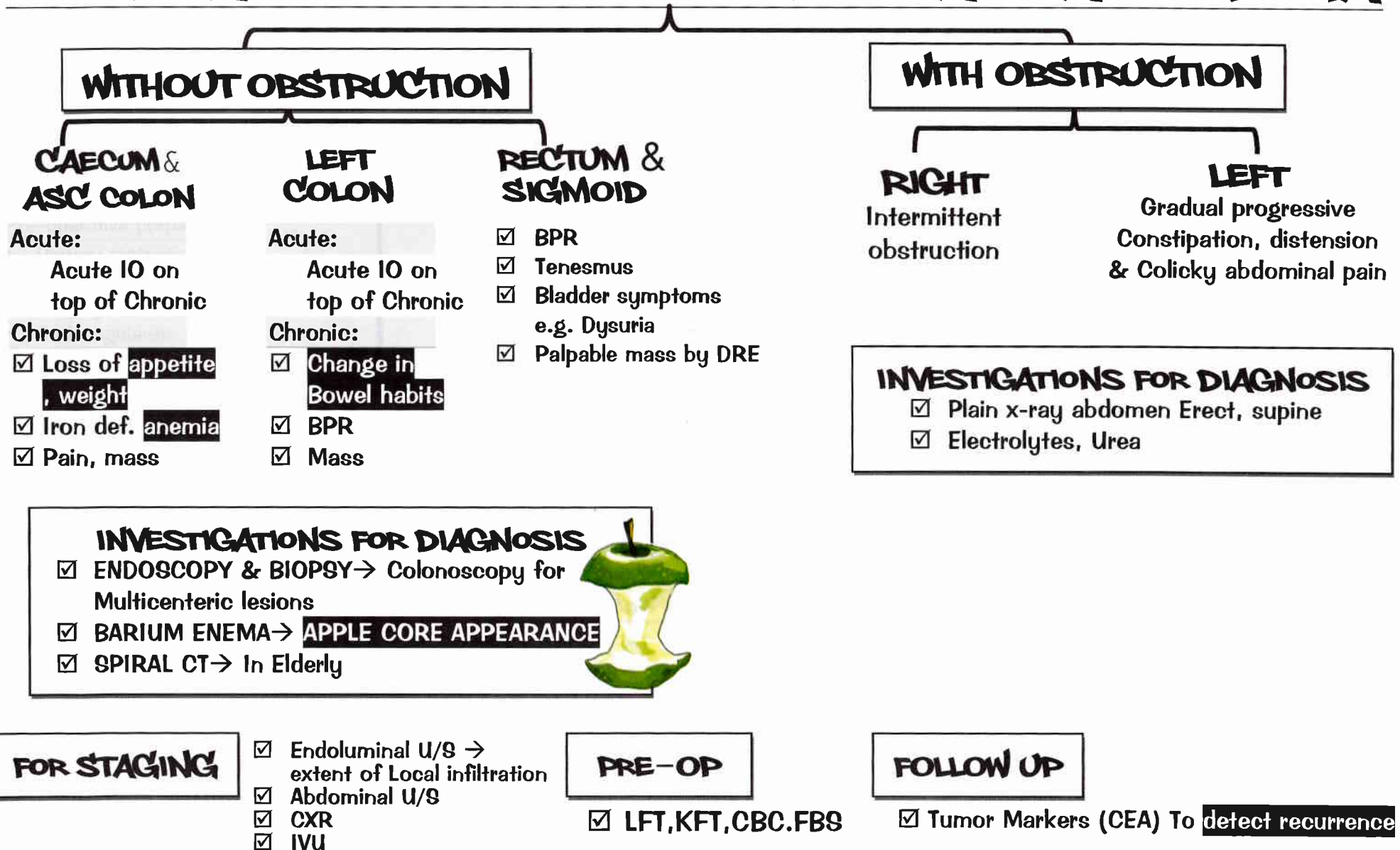
Of PROGNOSTIC value

STAGE A	Limited to Ms. Layer
STAGE B	Beyond Ms. Layer, NO nodal involvement
STAGE C	Regional LNs

MODIFIED DUKE's CLASSIFICATION

STAGE D	Distant metastasis
---------	--------------------

CLINICAL PICTURE OF COLORECTAL CARCINOMA



TREATMENT

ELECTIVE

(NO OBSTRUCTION)

OPERABLE

INOPERABLE

في وقت للتخفيف

Pre-operative preparation

- Dietary restriction
- Rectal enema
- Prophylactic Abs
- Anticoagulants

Radical Resection

(+ LNs dissection):

- ☑ Rt → Rt. Hemicolectomy
- ☑ Lt → Lt hemicolectomy
- ☑ Trans. → Trans Hemicolectomy

RESECTABLE

PALLIATIVE
Resection
(Adenocarcinoma)

IRRESECTABLE

RIGHT

Ileo-transverse
Anastomosis

LEFT

Proximal
Colostomy

قواعد في العلاج :

- اليمية يمينية و الشمال شمال و التي في النصف في النصف
- Rt → Rt hemicolectomy,
- Lt → Lt Hemicolectomy,
- Transverse → Transverse hemicolectomy
- ☑ Cancer colon is Adenocarcinoma
→ NOT sensitive to Radiotherapy or
Chemotherapy
- ☑ So, TTT is SURGICAL ONLY
- ☑ Patient is either Elective (NO
Obstruction) or Urgent (Obstruction)

URGENT

(OBSTRUCTION)

RESUCITATION & MONITORING

RIGHT

Right hemicolectomy
& Anastomosis

LEFT

مش طاهرة

و مفيش

وقت للتخفيف

- ☑ Left hemicolectomy
- ☑ Muckulicz, Hartman,
Duddley

RECTAL CARCINOMA

قواعد في العلاج :

- ☑ Spread is mainly UPWARDS → Resection is done with safety margin 2 cm
- ☑ Stump must be at least 5 cm

UPPER THIRD

ANTERIOR RESTORATIVE RESECTION

(Inferior mesenteric artery is divided, Sigmoid
colon, upper ½ of rectum are excised)

LOWER THIRD

ABDOMINO-PERITONEAL RESECTION

(Whole rectum is excised together with
anal canal, Terminal Colostomy is done)

MIDDLE THIRD

ABDOMINO-PERITONEAL RESECTION,
Terminal Colostomy is done)

2cm SAFETY MARGIN LEFT BELOW TUMOR

INFLAMMATORY BOWEL DISEASE

ULCERATIVE COLITIS

CROHN'S DISEASE

Etiology	UNKNOWN.. Geographical, racial differences, energy deficiency, alteration of mucosal glycol-protein.	Auto-immune, Hereditary, Genetic Factors
Site	- Most common → RECTUM - Rarely → Terminal ileum - If ileo-caecal valve → Back wash ileitis	- Most common → TERMINAL ILEUM 2nd most common → Colon - May affect any part of GIT
Macro.	- Mucosal edema + ulceration - NO skip lesions	Aphthous ulcer + COBBLESTONE APPEARANCE + Skip lesions
Micro.	- Inflammation Of MUCOSA, SUBMUCOSA CRYPT ABSCESSES PSEUDO-POLYPS... (edematous mucosa surrounded by ulcers)	- Serosal affection - Non-caseating Granuloma - Trans-mural.... Affecting whole thickness
Patient	Female. male	Male = Female ... 2 nd -4 th decade
C/O. O/E	Watery diarrhea, dehydration, abdominal pain	- Acute → as acute appendicitis, but there's history of diarrhea. - Chronic → Rectal bleeding, pain, diarrhea
Comp.	☒ Eye → Uveitis ☒ Joint → Arthritis ☒ Skin → Pyoderma gangrenosa ☒ Liver → cirrhosis, sclerosing cholangitis ☒ Toxic Megacolon ☒ Cancer colon.. Multicentric, Aggressive ☒ Massive Hemorrhage & BPR	☒ EYES, JOINT, SKIN → MOST COMMON ☒ Liver → Gall stones ☒ Mal-absorption ☒ Massive BPR ☒ Malignancy
Invest.	✓ Best is COLONOSCOPY & BIOPSY ✓ Barium Enema : - Loss of haustrations "PIPE STEM APPEARANCE" - Granular mucosa - Pseudo-polyps ✓ CBC → anemia, ↑ TLC ✓ Hypo-proteinemia, ↓ K⁺	✓ Best is COLONOSCOPY & BIOPSY ✓ Barium enema : - Cobblestone - String sign of Kantor ✓ CBC → anemia, ↑ ESR, CPR ✓ Hypo-proteinemia, ↓ Ca, ↓ Mg, ↓ Zn
TTT :	Medical treatment : ☑ Rest ☑ Diet Protein, Vitamins, iron ☑ Anti-inflammatory: - During attack → steroids enema - In between → Sulphasalazine Surgical treatment: ☑ Pan-procto-cholectomy + permanent ileostomy (ileal reservoir)	Medical treatment : ☑ Diet ... protein, CHO diet, vitamins ☑ Antispasmodics ☑ Corticosteroids & Sulfasalazine, Metronidazole Surgical treatment: ☑ Laparotomy → DD from appendicitis Imune therapy : ☑ Interferon

RECTAL PROLAPSE

	PARTIAL RP	COMPLETE RP
DEFINITION	Prolapse of rectal mucosa	Prolapse of whole thickness of the rectal wall
ETIOLOGY	1. Loss of weight (loss of supporting para-rectal fat) 2. Prolonged diarrhea or whooping cough (Due to excessive straining). 3. Advanced cases of hemorrhoids (grade III, IV). 4. BPH due to continuous straining. 5. Sphincteric atony in the elderly. 6. Iatrogenic injury of anorectal sphincter during a fistula operation.	More common in females, while in Egypt more in young males (due to bilharzial colitis). 1. Repeated diarrhea → excessive strangulation. 2. C.T. disease (Due to defective collagen synthesis) 3. Abnormal mobility of the mesorectum leading to lack of fixation between the rectum and sacrum. 4. In Egypt, Bilharzial proctitis and colitis → continuous tenesmus → strangulation
PATHOLOGY		
Length	< 5 cm	> 5 cm
Thickness	Mucosa only	Whole rectal thickness
COMPLICATIONS	1- Ulceration and infection. 3- Irreducibility. 5- Fecal incontinence.	2- Bleeding. 4- Strangulation and gangrene. 6- Discharge, pruritus.
CLINICAL PICTURE	1. <u>Something protruding from the anus at defecation:</u> ▪ Early: it reduces spontaneously. ▪ Late: it requires manual repositioning. 2. <u>Picture of complications.</u> 3. <u>Mucous discharge.</u>	
<u>Signs:</u>	Inspection: Prolapse is best seen in squatting or lateral position and straining. Palpation: For thickness of prolapse and tone of the sphincters, Prolapse, anal sphincter, pelvic floor, PR	
INVESTIGATIONS	1. Anorectal manometer, EMG of rectal sphincters. 2. Sigmoidoscopy or barium enema → exclude polyps, masses or any underlying cause.	
TREATMENT	Children 1. Correction of cause 2. Digital reposition → if failed	Adults: 1. Correction of cause 2. sphincter exercises 3. Excision of the prolapsed mucosa
	There are various surgical procedure include: <u>1- Rectopexy:(laparoscopic)</u> The rectum is mobilized and pulled up, then fixed to a mesh attached to pre-sacral (Waldey's) fascia and puborectalis muscle by sutures. <u>2- Excision</u> of the redant rectum , either through an abdominal or perineal approach or transanal approach called. Delorme's operation. <u>3. Thiersch operation</u> N.B. continence improve after surgery in only half of the patients. <u>4. Perineal rectosigmoidectomy.</u>	
	3. Submucous injection of absolute alcohol or phenol in almond oil → induces fibrosis 4. Thiersch operation (perianal circlage) The anal orifice is narrowed by passing a non absorbable suture around it. The wire is tightened while the assistant's finger is inside the anus. 5. Banding or excision of redundant mucosa.	

- Carcinoid tumor is the 2nd most common malignant tumor of Small intestine
- Carcinoid tumors most likely to produce carcinoid syndrome before metastasis originate from bronchus.
- About 40% of colorectal tumors present as surgical emergencies.
- Meckle's Diverticulum arises from the anti-mesenteric border intestine
- Meconium ileus inherited as AR not AD
- The primary etiology of jejunal and ileal atresia is vascular accident
- Burn, Fracture, hematoma, Small bowel obstruction are examples of third space sequestration



1. 1-Child patient presents with bleeding per rectum & angiography shows extravasations
Meckel's diverticulum.
2. Adult patient with bad general condition presents with night fever and sweat, loss of weight and appetite, diarrhea .colicky lower abdominal pain. & fetid bloody stool. CBC shows anemia, lymphocytosis and very high ESR.



Ulcerative TB of the intestine

GIT (5) QUESTIONS



- Mickel's diverticulum : Pathology & management
(Ain shams: 2005)
- Hirschprung's disease
(Ain shams: 2003)
- Management of rectal prolapse
(Azhar M: 2012)
- Explain why: Pt. with cancer caecum not usually have intestinal obstruction
(Kasr: 2008)
- Management of cancer colon
(Azhar M: 2012)
- Cancer sigmoid: C/P, Investigations and TTT.
(Ain shams: 2010)
- Cancer rectum: C/P
(Azhar F: 2009)
- Diverticular disease of the colon: Natural history, Complications & TTT.
(Kasr: 2008 , Kasr: 2011)
- Factors predisposing to malignancy in Ulcerative colitis
(Kasr: 2008)



SURGI- TOONS

ANAL CANAL



IMPERFORATE ANUS

	HIGH ANAOMALIES	LOW ANOMALIES									
DEFINITION	- Failure of rectum to pass through pelvic floor, PROXIMAL to pelvic floor - M:F = 2:1 - Associated with Fistulous communication with Posterior urethra in males, Vagina in Females - Associated with Congenital anomalies (VACTERL)	- Failure of rectum to pass through pelvic floor, DISTAL to pelvic floor - M:F = 1:2 - Not associated with other anomalies									
TYPES:	➤ ANORECTAL AGENESIS ➤ RECTAL ATRESIA <table border="1"> <thead> <tr> <th></th><th>ANORECTAL AGENESIS</th><th>RECTAL ATRESIA</th></tr> </thead> <tbody> <tr> <td>RECTUM</td><td> 1) Blind pouch ABOVE the pelvic floor 2) Fistulous comm. With UB, urethra, vagina </td><td>Blind pouch ABOVE the pelvic floor</td></tr> <tr> <td>ANUS</td><td>Absent</td><td>Blind pouch BELOW pelvic floor</td></tr> </tbody> </table>		ANORECTAL AGENESIS	RECTAL ATRESIA	RECTUM	1) Blind pouch ABOVE the pelvic floor 2) Fistulous comm. With UB, urethra, vagina	Blind pouch ABOVE the pelvic floor	ANUS	Absent	Blind pouch BELOW pelvic floor	➤ COVERED ANUS Anal canal is covered by Skin bar, anus usually opens into an ectopic site anterior to the normal position ➤ MEMBRANOUS ANUS Membrane at Dentate line → Bulging (due to retained meconium)
	ANORECTAL AGENESIS	RECTAL ATRESIA									
RECTUM	1) Blind pouch ABOVE the pelvic floor 2) Fistulous comm. With UB, urethra, vagina	Blind pouch ABOVE the pelvic floor									
ANUS	Absent	Blind pouch BELOW pelvic floor									
CLINICAL PICTURE	- Examine Anus, its size, site, presence of Anal dimple LOW ANOMALIES → Impulse on Crying at site of anus RECTAL ATRESIA → Thermometer CANNOT be introduced into anus for >1cm ECTOPIC ANUS → SC fistulous track full of meconium - There're evidences of intestinal obstruction										
INVESTIGATIONS	PLAIN X-RAY "INVERTOGRAM" ... 24 hours after birth: HIGH ANOMLIES: (+ Investigations for congenital anomalies) - Distance between Coin & distal gas- shadow >1cm - Bowel terminates PROXIMAL to Pubo-sacral line LOW ANOMALIES: - Distance between Coin & distal gas- shadow <1cm - Bowel terminates DISTAL to Pubo-sacral line										
	- Triple catheter test for rectal atresia - IVP → For urinary anomalies, Fistulas - Urine analysis → Fistula (meconium)	Membranous Anus → Triple catheter test									
TREATMENT	STAGED SURGERY: - Temporary colostomy - Ano-rectal Pull through - Closure of Colostomy (Post Sagittal operation) TTT. OF ASSOCIATED ANOMALIES	COVERED ANUS → Skin Excision MEMBRANOUS ANUS: - Cruciate incision of membrane - Trimming of edge									

Other LOW anomalies but WITHOUT imperforate anus:

- ✓ Ectopic anus
- ✓ Anal stenosis

TTT → Cut-Back operation (Ano-plasty)



PILONIDAL SINUS

DEFINITION:

- Disease of skin covering sacrum NOT an anal disease

INCIDENCE:

- Young adult male with Dark, dense, Hair

ETIOLOGY:

- Unknown cause
- Theories :
 - 1) Congenital → Infection of Cong. Dermal appendages after puberty
 - 2) Acquired → Loose hair theory, **JEEP BOTTOM THEORY**



PATHOLOGY:

- ☑ SITE
 - **UPPER PART OF ANAL CLEFT (MOST COMMON SITE)**
 - Other sites → Axilla, Umbilicus, Inter-digital, Supra-sternal notch

CLINICAL PICTURE:

Asymptomatic but may be presented by...

- **FOUL DISCHARGE** (containing hair), Local discomfort
- If abscess is formed → throbbing pain, redness, tenderness, Pus oozing from sinus

DIFFERENTIAL DIAGNOSIS:

- ☑ Peri-anal abscess
- ☑ Anal fistula

TREATMENT

PILONIDAL ABSCESS

- ♣ Rest, Analgesics, Analgesics, Antipyretics
- ♣ Drainage
- ♣ Removal of hair
- ♣ Wound is left to open by granulation tissue

PILONIDAL SINUS

LAYING OUT OF THE CAVITY & SIDE TRACKS

- ℞ Laying out the cavity and side tracks
- ℞ Wound is left open (heal by 2ry intention)
- ℞ Phenol cauterization may be applied

LOCALIZED EXCISION

- ℞ Wide excision of the skin & subcutaneous tissue down to periosteum of sacrum

CONSERVATIVE SURGERY

- ℞ Laying out the cavity & side tracks
- ℞ Curettage
- ℞ Packing & Leave wound open to heal by 2ry intention

RECENT D-SHAPED FLAP

ANAL FISSURE

DEFINITION:

- Elongated ulcer in the long axis of lower anal canal

INCIDENCE:

- Middle aged patient... (M=F)

ETIOLOGY :

NO DEFINITIVE CAUSE (majority of cases)

- Hard stool → MIDLINE POSTERIOR FISSURE (90%)... the most ischemic area
- Repeated deliveries → MIDLINE ANTERIOR FISSURE (10%)

DEFINITIVE CAUSES (minority of cases)

- IBD (Crohn's disease → MULTIPLE FISSURES)
- STDs
- Iatrogenic → Large enema, endoscope, Post hemorrhoidectomy,



ANAL FISSURE

ACUTE

- Superficial tear
- Pain (MAIN PATHOLOGICAL AGENT)
- Spasm of Sphincter
- ↓Blood flow
- ↓Healing

CHRONIC

As before + ...

2ry PATHOLOGICAL CHARACTERs

- Margin → indurated, thick, fibrotic
- Upper end → Anal papillae
- Lower end → SENTINEL PILE

SYMPTOMS:

:: Following attacks of Constipation with hard stools ::

PAIN	CONSTIPATION	BLEEDING	DISCHARGE	REFLEX SYMP.
▪ Sharp ▪ At anus, radiating to coccyx ▪ Starts at defecation ▪ Lasts for 1 hour after defecation ▪ Ends suddenly	▪ Patient postpone defecation due to severe pain	▪ Streak of blood on surface of stool	▪ Purulent if abscess is formed	▪ Burning micturition ▪ Dysmenorrhea ▪ Pain along thighs

SIGNS OF ACUTE ANAL FISSURE

- INSPECTION → ANAL VERGE is tightly contracted, Puckered
- DRE → Better to be avoided "Painful"

SIGNS OF CHRONIC ANAL FISSURE

- INSPECTION → Fissure, sentinel pile, fibrosed sphincter
- DRE → Button Hole induration of fissure

COMPLICATIONS → Acquired Megacolon, Fistula

INVESTIGATIONS: IT'S A CLINICAL DIAGNOSIS

TREATMENT:

- Life style modification (Diet, laxatives, Warm toilet)
- Medical → Chemical sphincterectomy (Local Anesthesia, Glyceryl Nitrate, steroids)
- Surgery → Lateral Sphincterectomy

TREATMENT:

SURGICAL

- IF NOT VERY FIBROSED: Lateral sphincterectomy
- IF VERY FIBROSED: Fissurectomy
- * Side effects: Fecal Incontinence

INTERNAL PILES

DEFINITION: Dilated tortous superior hemorrhoidal plexus of veins

PRIMARY PILES

- ✓ Congenital mesenchymal weakness
- ✓ Morphological
- ✓ Anatomical Factors
(Superior Rectal vein radicals)
- ✓ Exacerbation with straining, diarrhea, desentery

SECONDARY PILES

- ✓ Pregnancy
- ✓ Rectal carcinoma
- ✓ Portal hypertension

SYMPTOMS

HEMMOROIDES

PILES

دبة بتهرش

راجل على مسامير

BLEEDING

MOST COMMON, EARLIEST

- ⊖ Painless
- ⊖ At end of defecation
- ⊖ Bright red
- ⊖ Separate from stools

PROLAPSE

PRURITIS ANI

PAIN (IF COMPLICATED)

SIGNS

EXCLUDE CONGENITAL
MESENCHYMAL
WEAKNESS &
CAUSES IF PRESENT

- ✓ Inspection:
 - ⊖ 4th degree Prolapse
 - ⊖ 2nd, 3rd degree → With straining
- ✓ DRE:
 - ⊖ Thrombosed Piles ,
 - ⊖ Exclude Cancer rectum

COMPLICATIONS

- ⊖ Bleeding per rectum
- ⊖ Thrombosis
- ⊖ Fibrosis
- ⊖ Strangulation
- ⊖ Ulceration & Gangrene
- ⊖ Suppuration
- ⊖ Portal Pyemia
- ⊖ Partial rectal prolapse

INVESTIGATIONS

IT'S A CLINICAL DIAGNOSIS

- ✓ Proctoscope is done for diagnosis of 1st degree piles + exclusion of Cancer rectum
- ✓ Pelvi-abdominal U/S → Hepatic Peri-portal fibrosis, Pelvic Masses
- ✓ Investigations for the cause if suspected

CLINICAL DEGREES OF PILES:

1st DEGREE

شاب عنده
BPR و ال PR كويس

2nd DEGREE

وردة عباد الحزق

3rd DEGREE

الصباغ بيرجع

4th DEGREE

مبترجعش تانى

PROCTOSCOPE

CLINICAL DIAGNOSIS

Prolapsed only
during defecation,
spontaneous
reduction

Manual
reduction

Permanent
prolapse

TREATMENT OF INTERNAL PILES

UNCOMPLICATED

PRIMARY

SECONDARY

1st, 2nd degrees

- ☑ Conservative treatment:
 - High fiber diet
 - Laxatives
 - Decongestants suppository
- ☑ Injection sclerotherapy by Phenol 0.5% in almond Oil
SE: pain, abscess
- ☑ Rubber band ligation → (2nd degree)
- ☑ Selective hemorrhoidal artery ligation, Photocoagulation

3rd, 4th degrees

- ☑ HEMMOROIDECTOMY
Indications:
 - 3rd, 4th degrees
 - Failure of conservative TTT of 2nd degree
 - Fibrosis
 - Interno-external piles
- Complications of surgery :
 - Pain, urine retention
 - Anal stricture
 - Secondary Hemorrhage
- ☑ STAPLED HEMMOROIDECTOMY

COMPLICATED

STRANGULATION

TTT

EARLY

حجرا

شيلها
Surgical
intervention
+ antibiotic

LATE

سوداء

كمادات جلسرين
بالشاي
Decongestive
therapy:
(glycerine,
tanic acid)
+ Antibiotics

NOT

Not relieved within 1-2 hrs

THROMBOSIS

FIBROSIS

ULCER

Antibiotics,
anticoagulants ,
evacuation of
thrombus

Obstructed

GANGRENE

PORTAL PYEMIA

Antibiotics
+ Ligation
of superior
rectal veins

HEMORRHOIDS

ACUTE SHOCK

CHRONIC ANEMIA

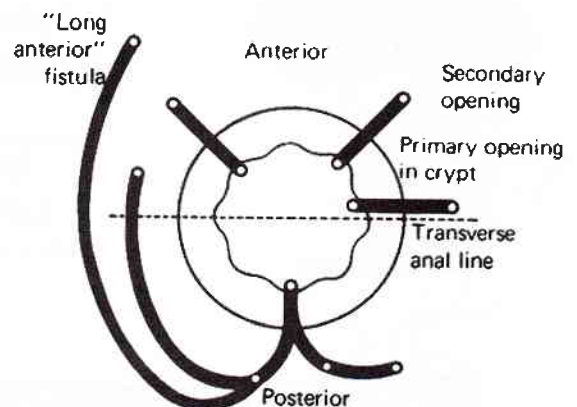
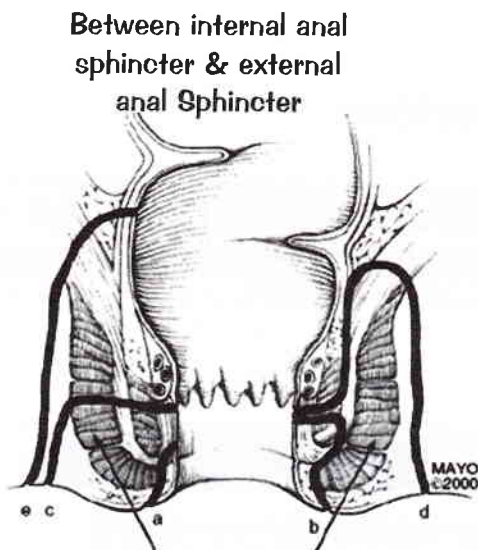
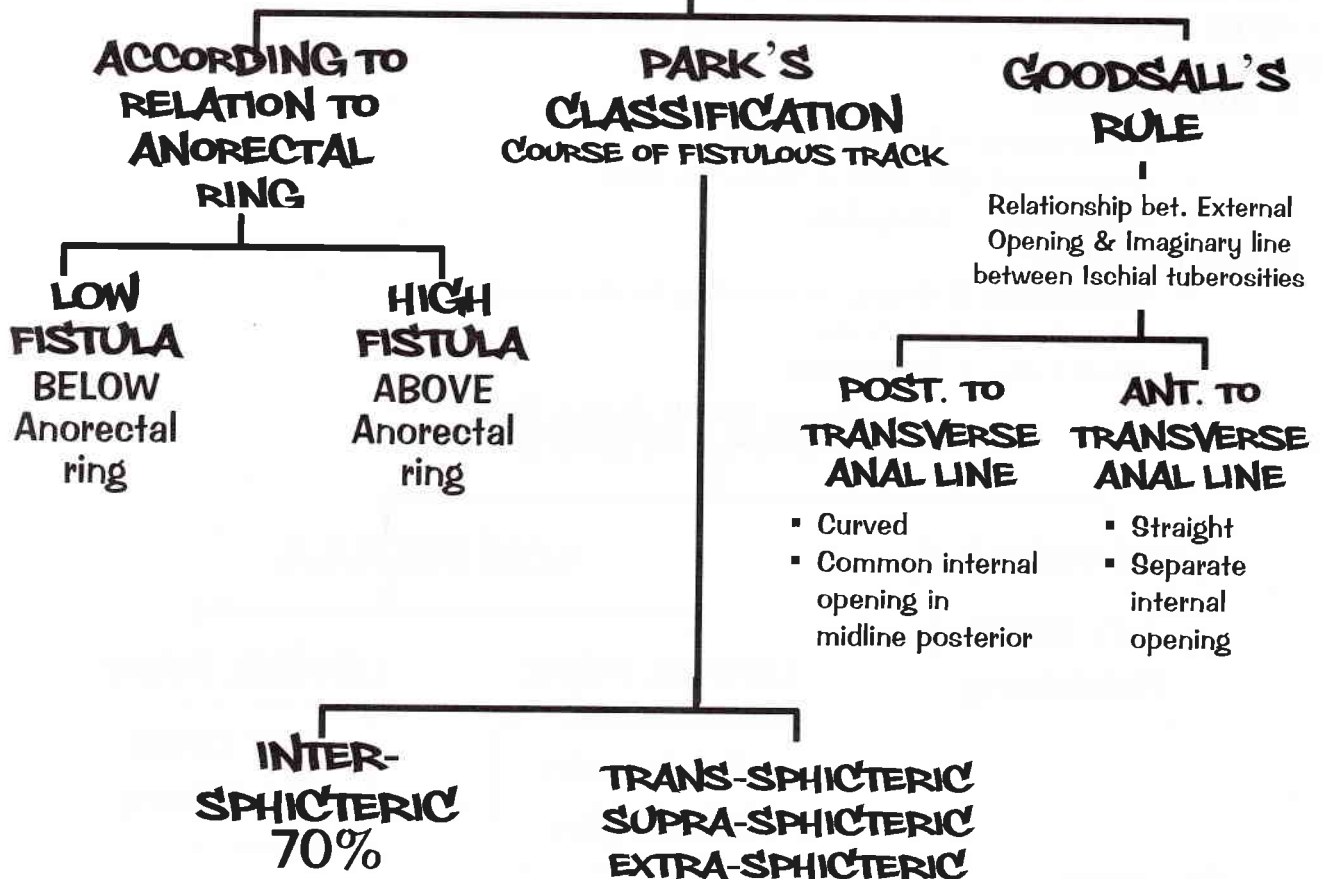
Adrenaline + Hemorroidectomy

ANAL FISTULA

DEFINITION: Granulomatous track opening internally & externally

ETIOLOGY: Infection of anal gland → ANAL ABSCESS → Fistula

CLASSIFICATION



FISTULA WITH MULTIPLE OPENINGS

- ⊖ Inflammatory : Crohn's , UC Barium enema
- ⊖ Neoplasma: Colloid carcinoma Colonoscopy & endoscopy
- ⊖ Organism : TB, actinomycosis, B CXR

CLINICAL PICTURE:**☑ SYMPTOMS:**

- History of peri-anal abscess (pain & swelling) Followed by Blood purulent discharge
- Pruritis Ani

☑ SIGNS:

- **INSPECTION** → External opening seen as small skin elevation (If bilateral → Ischiorectal abscess)
- **PALPATION** → Internal opening may be felt
- **PROBE EXAMINATION** ... done pre-operatively under anesthesia

INVESTIGATIONS:**☑ FOR DIAGNOSIS:**

- Proctoscopy → Internal opening
- Endoluminal U/S , MRI → Show the track
- Fistulogram ... rarely done

☑ FOR THE CAUSE:

- Colonoscopy & Biopsy → searching for the cause..
- BA enema → Crohn's dis.
- Chest x-ray → Tuberculosis

TREATMENT**LOW FISTULA**

LAY OPEN
Fistulotomy

LOW FISTULA**UPPER PART**

℞ Senton wire
℞ Fibrin glue

LOWER PART

LAY OPEN
Fistulotomy

If Failed:
PROXIMAL COLOSTOMY

IF HIGH INTER-SPHINCTERIC FISTULA →
LAY OPEN FISTULOTOMY FOR BOTH PARTS

**DIFFERENTIAL DIAGNOSIS:**

	PILO-NIDAL SINUS	PERI-ANAL FISTULA
Site	Near midline over coccyx	Close to anal verge
Probe	Up & Forward	towards anal canal

ANORECTAL ABSCESS

DEFINITION

- ☑ 1ry infection of the anal gland which is present between internal & external anal sphincter.

ETIOLOGY:

- ORGANISM → E.Coli
- ROUTE OF INFECTION → Direct
- PDF → Bad general condition, bad hygiene

TYPES:

- ☑ PRIMARY → Infection of anal gland which may spread:
 - Downwards → perianal abscess.
 - Outwards → ischiorectal abscess.
 - Inwards → Submucous abscess.
 - To supralelevator space → supralelevator abscess.
- ☑ SECONDARY to:
 - Inflammatory bowel disease.
 - Specific infections e.g. TB.
 - Anorectal carcinoma.
 - Infection of a perianal hematoma, thrombosed piles or anal fissure.



CLASSIFICATION:

	Perianal (subcutaneous) abscess 60 %	Ischiorectal abscess 30%	Submucous abscess 5%	Pelvirectal abscess 5%
Site	Subcutaneous close to the anus	Ischiorectal fossa	Submucosa above dentate line	Between the upper surface of levator ani and pelvic peritoneum
Etiology	• Infection of perianal hematoma. • Downward spread of intersphincteric abscess	• Lateral extension of intersphincteric abscess • Lymphatic or blood-borne infection (rare)	• Infected piles after injection • Inward spread of intrasphincteric abscess.	It is actually a pelvic abscess secondary to appendicitis, salpingitis or diverticulitis

CLINICAL PICTURE:

DON'T WAIT FOR FLUCTUATION

	SYMPTOMS	SIGNS
GENERAL	FAHM	Fever, tachycardia
LOCAL	Throbbing pain ...↑ by defecation Swelling ...in PERIANAL type...	Redness, hotness, tenderness

COMPLICATIONS:

- ☑ FISTULA → common with Ecoli

INVESTIGATIONS:

- ☑ CBC → Leucocytosis
- ☑ U/S → Pus collection in pelvi-rectal abscess
- ☑ If fistula occurs → Fistulogram

TREATMENT:

- ☑ Drainage of abscess (Cruciate incision with trimming of edges under GA)
- ☑ TTT of cause (if associated fissure → lateral sphincterotomy)
- ☑ TTT of complications → TTT of fistula (see before)

RECTUM AND ANAL CANAL

- Superior haemorrhoidal artery is the major arterial supply to anal canal
- The internal sphincter of rectum is derived from circular muscle layer
- Puborectalis is the most important muscle to preserve fecal continence
- Weight loss in patient with rectal cancer is suggestive of Hepatic metastasis
- Types of Piles: Internal, External, Intero-external (MOST COMMON)
- MOTHER PILE: occurs at 3,7,11 positions from SUPERIOR RECTAL VEIN
- DAUGHTER PILE: occurs in between.



1. Young adult male with dark dense hair presents with foul smelling discharge from just above midline of anus with local discomfort.

Pilonidal sinus



2. Middle aged male or female with history of constipation complaining of sharp agonizing pain localized to the anus radiating to the coccyx and genitalia starts at defecation and lasts 1 hour after it and slight streak of bright red blood on the surface of the stool.

Anal fissure.

3. Young adult with history of constipation (or any generalized weak mesenchyme as hernia, VV, etc..) presenting with painless passage of bright blood per rectum that are separated from the stool with local discharge and purities and may something protruding from anus.

try piles

4. Young adult with history of constipation presents with sudden severe pain and tense tender bluish swelling around the anus. { Peri-anal hematoma. }
5. Young male with history of hectic fever and throbbing pain presents with purulent discharge and local sourness and purities ani.

Anal fistula

GIT (6) QUESTIONS



- Peri-anal suppuration
- Peri Anal fistula
- Acute Fissure

(Azhar M: 2010, 2000)

(Azhar F: 2012)

(Azhar F: 2012)